सत्यमेव जयते

INDIAN AGRICULTURAL
RESEARCH INSTITUTE, NEW DELHI.

7002

I. A. R. I. 6.

MGIPC—S8—45 AR/52—8-6.53—1,000.

AN ART COLLECTION

and Service

Second to None

THE PANMURE ART SALON can lay legitimate claim to possessing one of Britain's biggest and best collections of high class original Paintings and Etchings. The opportunity thus afforded of inspecting this magnificent selection is one not to be missed by visitors to Dundee.

BUT the SALON is more than a collector and seller of Pictures, important as that is. Special attention is devoted to Picture Framing, Cleaning, Gilding and Restoring. **OLD MASTERS CAREFULLY TREATED AND RESTORED.** The Proprietors arrange Picture Sales in any part of Britain, and attend Sales at Paris and Amsterdam.

May we have the pleasure of submitting an estimate for any of the above services.

ROBERTSON & BRUCE
Limited

Directors JOHN ROBERTSON, J.P.
STEWART Y. BRUCE.

Panmure Art Salon
90 Commercial Street
Dundee

TELEPHONE 2075

Telegrams: "ETCHINGS."

WORKS ON AGRICULTURE, &c

JOURNAL OF AGRICULTURE, AND TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

Second Series, 1828 to 1843, 21 vols.—*out of print.*
Third Series, 1843 to 1865, 22 vols.—*out of print.*

INDEX TO THE FIRST, SECOND, AND THIRD SERIES OF THE TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND FROM 1799 TO 1865. Cloth, 5s.

TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND. Fourth Series, 1866-71, 6 numbers, sewed, 4s. each; 1872-88, 17 volumes, cloth, 5s. each. Vols. for 1878 to 1884 *out of print.*

INDEX TO THE FOURTH SERIES OF THE SOCIETY'S TRANSACTIONS FROM 1866 TO 1888, bound in cloth, 3s.

TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND. Fifth Series, 1889-1932, 44 volumes, bound in cloth, 5s. each. Vols. for 1889, 1890, 1893, 1894, 1899 to 1902, 1905 *out of print.*

INDEX TO THE FIFTH SERIES OF THE SOCIETY'S TRANSACTIONS.

From 1889 to 1895, paper cover, 1s.
From 1896 to 1902, paper cover, 1s.
From 1903 to 1909, paper cover, 1s.
From 1910 to 1916, paper cover, 1s.
From 1917 to 1923, paper cover, 1s.
From 1924 to 1930, paper cover, 1s.

REPORT ON THE PRESENT STATE OF THE AGRICULTURE OF SCOTLAND, ARRANGED UNDER THE AUSPICES OF THE HIGHLAND AND AGRICULTURAL SOCIETY. Presented at the International Agricultural Congress at Paris in June 1878. Cloth, 5s. *Free to Members on application to the Secretary.*

DICTIONARIUM SCOTO-CELTICUM: A DICTIONARY OF THE GAELIC LANGUAGE, in two volumes. Compiled and published under the direction of the Highland Society of Scotland, 1828. Bound in cloth, £7, 7s.; 6 copies on extra paper, £10, 10s.

PRACTICAL REMARKS ON AGRICULTURAL DRAINAGE. By WILLIAM W. HOZIER of Tannochside. Prize Report, published under the auspices of the Society, 1870 Cloth, 1s.

HUMANITY TO ANIMALS, BEING EXTRACTS FROM PRIZE ESSAYS ON THE MOST EFFECTUAL METHOD OF INCULCATING THAT DUTY IN ELEMENTARY SCHOOLS. Published under the auspices of the Society. Sewed, 3d.

HISTORY OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND, WITH NOTICES OF ANTERIOR SOCIETIES FOR THE PROMOTION OF AGRICULTURE IN SCOTLAND. By ALEXANDER RAMSAY, LL.D. Demy 8vo, cloth, 16s.

THE PINE BEETLE (HYLESINUS PINIPERDA L.) By W. SOMERVILLE, D.Œc., B.Sc. Prize Report. Sewed, 3d.

The above Works can be had on application to WILLIAM BLACKWOOD & SONS LTD., 45 *George Street, Edinburgh, and* 37 *Paternoster Row, London.*

TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

WITH

AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1933

PUBLISHED ANNUALLY

FIFTH SERIES

VOL. XLV.

EDITED BY JOHN STIRTON, SECRETARY TO THE SOCIETY

EDINBURGH:
WILLIAM BLACKWOOD & SONS LTD., 45 GEORGE STREET
AND 37 PATERNOSTER ROW, LONDON
1933

CONTENTS

PAGE

1. Some Field Experiments at Craibstone. By Professor James Hendrick, B.Sc., F.I.C. 1
2. Cattle Feeding. Relative Values of Swedes, Potatoes, Dried Sugar Beet Pulp and Silage in Beef Production. By Principal William G. R. Paterson, B.Sc., N.D.A.(Hons.) (*Illustrated*) 23
3. Insect and Other Animal Pests of 1932. By R. Stewart MacDougall, M.A., D.Sc., LL.D. (*Illustrated*) 46
4. The Education of the Rural Child. By Professor E. Shearer, M.A., B.Sc. 81
5. Young Farmers' Clubs. By W. J. Grant, M.A., B.Sc. 88
6. Some Practical Aspects of Recent Pasture Research. By Arthur Crichton, M.A., B.Sc. 103
7. Control of the Sheep Tick on Hill Pastures. A Review of the Possibilities, with some Experimental Data. By J. MacLeod, B.Sc., Ph.D. 114
8. The Use of Chlorates in Weed Control. By D. Clouston, M.A., B.Sc., and A. Hill, B.Sc., B.Sc.(Agr.) 128
9. Agricultural Research in Scotland in 1932. Being a Brief Summary of Work at the Scottish Agricultural Research Stations during the Year . . 136
10. Milk Records. By William Stevenson, B.Sc., N.D.A., N.D.D. 155
11. Analyses for Members during 1932. By Dr J. F. Tocher 181
12. The Cereal and other Crops of Scotland for 1932 188

13. THE WEATHER OF SCOTLAND IN 1932. By J. CRICHTON, M.A., B.SC., F.R.S.E. 214
Rainfall Records for 1932, in inches 226

14. AGRICULTURAL STATISTICS 227

15. PRICES OF GRAIN IN EDINBURGH MARKET FOR 1932 . 241

16. PRICES OF SHEEP SINCE 1818 242

17. PRICES OF WOOL SINCE 1818 246

18. GENERAL SHOW AT INVERNESS, 1932 (*Illustrated*) . . 249

19. PREMIUMS AWARDED BY THE SOCIETY IN 1932 . . 281

20. EDINBURGH SHOW, 1931. ALTERATIONS IN PRIZE LIST . 375

21. ACCOUNTS OF THE SOCIETY FOR 1931-32 . . . 376

22. PROCEEDINGS AT SOCIETY'S BOARD AND GENERAL MEETINGS 385

APPENDIX.

PREMIUMS OFFERED BY THE SOCIETY IN 1933 . . . 1

INDEX . . . . *At end*

⁂ *It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the Writers whose Papers are published in the 'Transactions.'*

JOHN STIRTON,
Secretary.

8 EGLINTON CRESCENT,
EDINBURGH.

ILLUSTRATIONS

FIG. PAGE
1. Cattle Feeding Pens 23
2. Colorado Beetles 51
3. The Colorado Beetle (*Leptinotarsa decemlineata*) 52
4. Clusters of eggs of Colorado Beetle on potato leaves collected in France 52
5. A cluster of eggs of Colorado Beetle on leaf of potato 53
6. Larva of Colorado Beetle on leaf of potato 53
7. Larva of Colorado Beetle 54
8. The Large Brown Weevil (*Hylobius abietis*) 55
9. The Grey Squirrel 71
10. Bark of stem and branch stripped by Grey Squirrel 73
11. Musk Rats 74
12. The Coypu or Nutria 78
13. Shorthorn Bull, "Balcairn Colonel" 227,865 265
14. Aberdeen-Angus Bull, "Jarvie Eric" 67,784 265
15. Galloway Bull, "Excelsior of Castle Milk" 15,884 266
16. Belted Galloway Bull, "Allington Concrete" 467 B 266
17. Highland Bull, "An Pròiseil Riabhach of Killundine" 3656 267
18. Ayrshire Cow, "Meikle Kilmory Rosary" 91,252 267
19. British Friesian Heifer, "Douneside Bocula 5th" 145,894 268
20. Red Poll Heifer, "Kilmartin Prim" 45,519 268
21. Galloway Bullock, "Xmas Gift" 269
22. Clydesdale Entire Colt 269
23. Clydesdale Gelding, "Jim" 270
24. Clydesdale Yeld Mare, "Onoway" 270
25. Hunter Filly, "Harmony VII" 7649 271
26. Western Island Pony Mare, "Isle of Arran Bonnie Jean" 4408 271
27. Shetland Pony Stallion, "Kitmagur of Penniwells" 1246 272
28. Blackface Tup 272
29. Cheviot Shearling Tup 273
30. North Country Cheviot Shearling Tup, "Samson" 273
31. Border Leicester Tup, "Sandyknowe Evergreen" 274
32. Half-bred Shearling Tup 274
33. Oxford Down Tup Lamb 275
34. Suffolk Tup, "Kirton Protection" 22,407 275
35. Shropshire Tup 276
36. Dorset Horn Ewe 276
37. Three Dorset Down Lambs 277
38. British Goat, "R3 Didgemere Marvel" 8112 278
39. Large White Boar, "Touch Hercules" 73,119 279

TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

◆

SOME FIELD EXPERIMENTS AT CRAIBSTONE.

By PROFESSOR JAMES HENDRICK, B.Sc., F.I.C.,
University of Aberdeen.

THE soil of Craibstone, the experimental farm of the North of Scotland College of Agriculture, is typical of the soil of considerable areas of arable land in the north and north-east of Scotland. It is derived from granitic and metamorphic rocks which were ground down originally by glacial action. In the long period which has passed since the last glaciation this powdered rock debris has been weathered into soil; but the chemical weathering of the mineral particles composing the soil has been only superficial, and it has been shown in previous papers[1] that the fertility and character of such soil is due, in part at any rate, to the great reserves of plant food which are contained in the superficially weathered minerals which are slowly but constantly breaking down further and giving up for use by crops supplies of essential materials like potash, lime, magnesia and phosphoric acid. Such soils formed in a cool moist climate are podsolic in character, though the profile is often not well developed, are generally well supplied with organic matter and its contained nitrogen, and are often moorish or peaty. Soils of a similar type and origin appear to be found extensively in Norway, Sweden and Finland. These northern Scottish soils are very different in many respects from the soils of the south-east of Scotland, and differ still more markedly from the soils of central and south-eastern England, which are those generally taken as typical in British agricultural literature.

---

[1] "The Value of Mineralogical Examination in Determining Soil Types, with a Method of Examination and a Comparison of Certain English and Scottish Soils." By James Hendrick, B.Sc., F.I.C., and George Newlands, M.A., B.Sc., A.I.C. 'Jour. of Agric. Science,' Vol. xiii., pp. 1-17.

"The Mineralogical Composition of Some Scottish Soils." By James Hendrick, B.Sc., F.I.C., and George Newlands, M.A., B.Sc., A.I.C. Ibid., Vol. xv., pp. 257-71.

"Some Characters of Scottish Soils." By James Hendrick, B.Sc., F.I.C. 'Transactions of the Highland and Agricultural Society of Scotland.' 1925. Fifth Series. Vol. xxxvii., pp. 71-85.

In a paper in the 'Transactions' in 1926[1] the fertility of Craibstone soil was illustrated from the results of rotation experiments carried out there, and the present paper gives further results obtained from these experiments, which have been continued to the present time. This paper also deals with experiments which have been carried on from time to time with new nitrogenous and other manures.

THE TYPE OF SOIL.

Glacial granitic soils, like that at Craibstone, are generally uneven in depth and irregular in surface and in texture. They are therefore difficult subjects for the conduct of field experiments, as it is not easy to find a sufficient area which is level, and even when such is found and the surface looks as if the whole area is of equal quality, further examination is apt to show differences in depth and texture. Carefully selected areas of land were used for all the experiments mentioned below.

Analyses of the soils of Craibstone were given in the 1926 paper; since then improved methods have been adopted as official by the Agricultural Education Association. Below an analysis is given of the soil of South Meethill field made by the latest methods.

The mechanical analysis of this soil shows that it is a light loam containing much coarse and fine sand and comparatively small quantities of silt and clay. Some of the soils of Craibstone—for instance, the soil of the Woodlands field—are shown by analysis to be still lighter and more sandy than that of the South Meethill field.

TABLE I.

MECHANICAL ANALYSIS, SOUTH MEETHILL FIELD.

	Per cent.
Coarse sand	42·2
Fine sand	28·3
Silt	9·7
Clay	9·5
Loss by solution	2·5
Air-dry moisture content	2·5
Loss on ignition	8·8

---

[1] "Some Points about Soil Fertility." Illustrated from Craibstone Experiments. 'Transactions of the Highland and Agricultural Society of Scotland.' 1926. Fifth Series. Vol. xxxviii., pp. 195-215.

Chemical analysis of typical Craibstone soil shows that it is well supplied with organic matter and nitrogen, and that it is also well supplied with phosphate and potash. There is no carbonate of lime present, but a considerable proportion of lime is present in other forms, chiefly silicates, and a moderate amount of this lime is easily dissolved.

TABLE II.

CHEMICAL ANALYSIS, SOUTH MEETHILL FIELD.

Fine Earth Air-Dried.

pH. value	5·35
Hydrolytic acidity	55·6
Replaceable acidity	3·8
Carbonate of lime	None
	Per cent.
Lime requirement as $CaCO_3$	0·23
Loss on ignition	8·83
Sand and insoluble silicates	81·21
Nitrogen	0·29
Soluble in Strong Hydrochloric Acid.	
Soluble silica	6·56
Aluminium oxide	2·74
Iron oxide	2·27
Lime	0·42
Magnesia	0·39
Potash	0·13
Soda	0·60
Sulphuric acid (SO_3)	0·16
Phosphoric acid (P_2O_5)	0·22
Soluble in Dilute Citric Acid.	
(Probably Available Constituents.)	
Lime	0·121
Potash	0·018
Phosphoric acid (P_2O_5)	0·072

The above analysis shows that the soil is very well supplied with phosphoric acid in a form which is probably available to crops; it also shows a good supply of readily available potash. In analyses of some other samples of Craibstone soil even higher figures for probably available phosphoric acid and potash have been found. We may take it then that, generally speaking, the soil is well supplied with phosphoric acid, and fairly well supplied with nitrogen, potash and lime, in states in which they can be used by crops. This is confirmed by the results of many field experiments, which show that the soil has a high natural fertility.

The mechanical analysis shows that Craibstone soil consists largely of sand. The sand, however, is not composed merely of inert particles of quartz, as is so often the case in soils of a different type, but to a considerable extent consists of particles of felspar, mica and other compound silicates only slightly weathered, and containing large stores of bases such as potash, soda, lime and magnesia. The soil also contains particles of phosphates derived, like the compound silicates, from the original granitic rock. These mineral particles are constantly, though slowly, undergoing weathering, and the fertility of the soil is maintained through the supplies of lime, potash and other bases, and the supply of phosphoric acid, which are constantly being liberated by such weathering processes. As it contains so much sand, Craibstone soil is open in texture and easily worked; it is, however, more coherent than might be expected from its mechanical analysis.

ROTATION EXPERIMENT, WOODLANDS FIELD.

An account of this experiment, which was started in 1922, was given in the 1926 paper, in which the results for the first four years were summarised. Before the experiment was started the whole of the soil was trenched in order to break up the pan which was found at 6 in. to 12 in. below the surface, and to render the soil which was somewhat unequal in depth more even. The soil after being cropped uniformly for a few years was then divided into six strips to represent the six shifts on a farm under the six-course rotation of roots, barley, hay, two years grazing followed by lea oats. Each strip goes through the whole rotation in six years, and in each year there is one strip representing each crop of the rotation.

Each strip is divided into six plots, which are differently manured. All the plots, including No. 1, which gets no artificial manures, receive dung with the root crop at the rate of 12 tons per acre. The other manuring is as follows :—

Plot 1. No artificials.
„ 2. Complete manure with superphosphate.
„ 3. Complete manure with ground mineral phosphate.
„ 4. The same as Plot 2, omitting phosphate.
„ 5. The same as Plot 2, omitting nitrogen.
„ 6. The same as Plot 2, omitting potash.

The complete artificial manuring given to Plot 2 is at the following rate per acre :—

	Turnips and Potatoes.	Oats, Barley and Hay.
Sulphate of ammonia	1 cwt.	1 cwt.
Superphosphate	4 cwt.	2 cwt.
Muriate of potash . . .	1 cwt.	1 cwt.

The same manuring is given to Plot 3, except that 4 cwt. of ground mineral phosphate is applied to the root crop instead of superphosphate, and 2 cwt. of ground mineral phosphate is applied to oats, barley and hay instead of superphosphate. It will be seen that the manuring is very heavy; 6 cwt. per acre of artificials is given with the root crop in addition to dung, and further dressings of artificials are given to the two cereal crops of the rotation and to hay. An artificial dressing is thus given in four out of the six years of the rotation. To start with, this field was considered one of the worst on the farm, and heavy manuring was given in this rotation experiment to find how high the crops on this poor soil could be raised by such liberal treatment.

In each year the root break is divided into different parts, as is usual on an ordinary farm. On each plot of the root break, turnips, swedes and potatoes are grown. During three years a few drills of sugar beet were also tried.

In Table III. given below, the results for the whole eleven years, 1922 to 1932, during which the experiment has been carried on, have been summarised.

TABLE III.—*A*.

ROTATION EXPERIMENT, WOODLANDS FIELD.

Yield per acre.

Average of eleven years, 1922-1932.

Root Crops.

	Turnips.		Swedes.		Sugar Beet.		Potatoes.	
No. of years averaged .	11		7		3		11	
	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.
Plot 1	19	0	11	14	5	10	11	13
,, 2	22	8	20	7	7	17	13	11
,, 3	23	2	20	15	6	9	12	17
,, 4	21	9	18	17	6	4	12	10
,, 5	19	11	18	2	6	13	11	7
,, 6	21	13	19	18	7	14	12	11

[TABLE III.—*B*.

TABLE III.—*B.*

Grain Crops.

	Oats.		Barley.	
	Grain.	Straw.	Grain.	Straw.
No. of years averaged .	10	10	11	11
	cwt.	cwt.	cwt.	cwt.
Plot 1	13·5	21·5	14·1	28·8
„ 2	22·6	34·9	19·8	40·0
„ 3	19·0	30·6	17·3	37·1
„ 4	19·0	29·9	17·4	36·2
„ 5	15·3	24·4	14·0	31·4
„ 6	18·1	31·1	18·1	36·3

TABLE III.—*C.*

Hay and Grass.

	Hay.	Aftermath.	Pasture, 2nd Year.	Pasture, 3rd Year.
No. of years averaged .	11	5	7	7
	cwt.	cwt.	cwt.	cwt.
Plot 1	42·7	45	127	151·5
„ 2	56·6	63·4	138·6	151·6
„ 3	53·9	68·2	139·8	156·5
„ 4	50·4	66·2	140·9	160·3
„ 5	53·8	78·3	146·1	156·6
„ 6	49·3	39·9	116·0	127·6

Table III. is divided into three sections. In Section A. the results from root crops are summarised, in Section B. the results from grain crops, and in Section C. those from hay and grass. Turnips and potatoes were grown in the root break every year during the whole eleven years which the experiment lasted, but swedes were not grown during the first four years, and the results for them are the average of only seven years' growth. In the case of sugar beet the average is for three years only, as this crop was grown only during the years 1927, 1928 and 1929, when interest was being taken in the crop in this district.

In the case of cereal crops, the average for oats is for ten years only. Oats and barley were grown every year during the eleven years of the experiment, but owing to an accident no results were obtained from the oat break in 1932. The hay was weighed every year during the eleven years of the experiment, and the table therefore gives the average for eleven crops. In the early years of the experiment, however, the aftermath obtained after the hay was removed was not weighed, nor was the grass grown as pasture in the second and third years. It is not possible to graze these small plots, but in order to represent grazing as closely as possible they are cut at intervals of a few weeks when in second and third-year grass. During the past seven years the grass has been weighed in the green state as soon as cut, and the tables therefore contain the average weight of grass obtained as second and third-year grass during the past seven years. During the past five years the aftermath after the hay crop has also been cut and weighed green, and the average green weight obtained during these five years is given in the table.

The tables show that this poor soil is able to give good crops of nearly all kinds when it is well manured. Even No. 1 Plot, which gets only 12 tons of dung with the turnip crop once in the course of the six-year rotation, gives quite a fair return with all crops. The addition, however, of artificial manures increases the average crop obtained in all cases. In the table the results given are averages obtained over a period of years. The individual results vary very greatly from year to year according to the nature of the season. For instance, No. 1 Plot gives on the average a crop of 19 tons of yellow turnips, but this varied from 12·4 tons in 1930 to 25 tons 10 cwt. in 1932. The potato crop on No. 1 varied from 8 tons 13 cwt. in 1927 to 16 tons 17 cwt. in the good season 1932, and gives the excellent average of 11 tons 13 cwt. for the whole period of eleven years. Similar variations are found on plots which were treated with artificial manures.

No. 1 Plot gives a good average crop with all crops except sugar beet. This shows that on a soil such as that of Craibstone, which is naturally well supplied with phosphate and fairly well supplied with potash and nitrogen, a moderate dressing of dung once in the course of a rotation is able to maintain the crops at a good average level, even on what is considered one of the poor fields of the farm. It is not to be expected that the addition of artificial manures, even in liberal dressings, will raise the crops very greatly. This is what is actually found to be the case. The heavy artificial dressings on these plots have given with the root crops only moderate increases over those obtained with dung alone.

In the case of the cereal and grass crops greater increases are obtained from the use of artificial manures. This is probably partly because the dung was applied to the root crops, which got the chief benefit from it, while other crops, which get less from the dung, gave greater increases for the use of other manures.

In the case of turnips and swedes it will be seen that, on the average, the insoluble phosphate, ground mineral phosphate, gives a better return than superphosphate. There are probably two reasons for this. In the first place, it is found that the superphosphate plots suffer more from finger-and-toe than those which receive ground mineral phosphate; this restricts the weight of crop to some extent. The other reason is probably that in the plots which receive phosphatic dressings there is a great accumulation of phosphate residues. It has been shown clearly as the result of experiments with drain gauges that no phosphate is washed away in solution in the drainage even when it is applied in the soluble form. Phosphates not taken up by the crop will therefore accumulate in the soil. In no case does the crop take up in the first year the whole of the phosphate applied to the soil; and in the case of Plot 3, where large dressings of ground mineral phosphate are given, there are probably great accumulations of phosphate left over from the residues of the ground mineral phosphate applied during the past eleven years; these, with the great amount of phosphate naturally contained in the soil itself, are sufficient to supply all the phosphate required by the crop, and as no acid superphosphate is applied to this plot, the bulbs are on the whole sounder. In the case of potatoes the same causes do not operate, and Plot 2 gives on the average a considerably larger crop than Plot 3. The acid superphosphate does not cause any disease in potatoes, but rather favours the growth of this crop, which flourishes best on a moderately acid soil. Plot 2 gives a considerably bigger crop than Plot 3 of sugar beet also, but no great reliance can be placed upon the sugar beet figures. The crops obtained were small, probably because this somewhat acid soil is not suitable for the growth of sugar beet. It has been shown elsewhere[1] that one of the chief factors in restricting the growth of sugar beet and in making it a crop unsuitable for this area is the acidity of the soil. It was found during the three years in which sugar beet was grown on these highly manured plots that only small and disappointing crops were obtained.

Plots 4, 5 and 6 show the effect of leaving out phosphate, nitrogen and potash respectively from the artificial manuring. The want of phosphate produces comparatively little effect on roots, cereals, or grass. There is on the average a small reduction of crop in each case, but in no case is the reduction very serious. This is what might be expected on a soil like that of Craibstone which is so well supplied naturally with phosphate. The want of artificial nitrogenous manure produces a greater effect. The average crops are more seriously reduced, both in the case of root crops and in the case of cereals, by leaving out nitrogen than by leaving out the phosphate. With turnips and potatoes, when nitrogen is left out of the artificial manuring, the crop is little, if any, greater than that which received no artificial manure. When nitrogen is not supplied to these crops phosphate and potash alone produce little or no effect. A somewhat similar result is shown in the case of cereals in section B. of the Table. On the other hand a very different result is shown with the grass crops in section C.

---

[1] "Certain Acid Soils and Growth of Sugar Beet." By the late Mr George Newlands, M.A., B.Sc. From the 'Jour. of Agric. Science,' Vol. xviii., pp. 704-12.

The want of potash manure on Plot 6 does not, generally speaking, reduce seriously the weight of the root crops or of the grain crops, but it has a very serious effect upon the weight of the grass crops shown in section C. The lack of potash has also some effect on the quality of the crops. The percentage of dry matter in the turnips and swedes has been determined from year to year. This figure varies with the season, but it is almost invariably found that the lowest percentage of dry matter is found on the plot which receives no potash. Similarly, during the three years that sugar beet was grown it was found that the lowest percentage of sugar was in the beet grown on Plot 6, which received no potash. These percentages were even lower than those obtained from Plot 1 on which no artificial manure was used.

With grain crops the effect of manuring with artificials was distinctly greater than with root crops. Also, the difference between Plot 3, which received ground mineral phosphate, and Plot 2, which received superphosphate, was always quite distinct. Grain crops seem less able than root crops to draw upon insoluble phosphates, and on the average the grain crops which received ground mineral phosphate gave no better return than those which received no phosphatic dressing.

The grain crops varied from season to season even more than the root crops. Thus, in 1927, which was a poor season, the oats on Plot 1 yielded only 5·3 cwt. of grain, while in 1929 the yield was 21·4 cwt. In the same years the yield from the well-manured Plot 2 varied from 18·3 cwt. to 34·8 cwt. of grain.

The results shown with grass, Section C., are very interesting. If Plot 2 is compared with Plot 1 it will be seen that the addition of artificial manures to Plot 2 raises the crop considerably, both in the case of the hay and the aftermath, but in the second and third years the effect gradually wears off. In the second-year grass, Plot 2 has still a small advantage over Plot 1, but in the third year they are practically equal. By the third year the effect of the dressing of artificial manure which was given to the hay has almost completely passed away, and the weight of grass obtained from Plot 1, which received no artificial manure, is as great on the average as that obtained from Plot 2.

The use of ground mineral phosphate on Plot 3 instead of superphosphate on Plot 2 has had little effect on the grass. The hay is a little lighter on Plot 3 than on Plot 2, but on the other hand the aftermath and pasture weights are greater on Plot 3. When phosphate is left out altogether on Plot 4 the hay is somewhat reduced, but on the other hand the pasture in the second and third years is heavier than where phosphate was applied. Where nitrogen is omitted on Plot 5 there is a slight loss in weight of hay, but aftermath and second-year pasture are both heavier than the crops obtained where nitrogen was applied. This was due, in part at anyrate, to the effect of the nitrogen in promoting the growth of grass and restricting that of clover. It was the greater weight of clover which accounted for the increased weight of crop where nitrogen was not applied.

The most remarkable effect is that produced by leaving out potash in Plot 6. The want of potash diminishes the hay considerably and causes both the aftermath and the pasture to be distinctly lighter than that obtained from the other plots, not excepting Plot 1 which received no artificial manure. This effect is found nearly every year, in good seasons and in bad, and is difficult to explain on this soil which is naturally well supplied with potash. The result, however, is found year after year, that the application of phosphate and nitrogen without potash to Plot 6 gives a smaller crop of aftermath and of pasture than is given by Plot 1 where no phosphate, nitrogen, or potash is applied.

ROTATION EXPERIMENT, SOUTH MEETHILL FIELD.

In the 1926 paper an account was given of a rotation experiment which has been carried on for many years on South Meethill Field. This experiment was originally started by Sir Robert Greig and the present writer when the College of Agriculture acquired Craibstone in 1913. Its object was to demonstrate the effect of different methods of manuring and different quantities of manure applied through the rotation. The land was carefully chosen as being apparently one of the most uniform pieces of soil upon Craibstone farm, but the results soon demonstrated how difficult it is to obtain any considerable area of land on soil of this character which is even moderately uniform in quality throughout. Most of the plots were laid out in triplicate, the triplicates being scattered throughout the area. There were 42 plots in all, laid out in rows, and each row was divided into two halves; one half was limed and the other half was unlimed. This divided each of the 42 plots into two sub-plots, making 84 plots in all.

The results obtained from this experiment have been somewhat disappointing, and, as a great deal of labour is involved in weighing separately the crops obtained from all these 84 plots, the experiment is now being abandoned as it does not yield results commensurate with the labour involved. It was found that differences in the quantity of manure applied did not, in most cases, produce significant differences in the crops obtained throughout the rotation.

As a matter of fact the differences between duplicate or triplicate plots which received the same manuring were in many cases greater than the differences between different plots receiving different dressings of manure. This is due first to the fact that, as has been already shown, this soil is well supplied with phosphates, potash and nitrogen, and, therefore, great differences in crop cannot be expected from differences in the amount of manure applied. On the other hand, as the soil itself is uneven in depth and quality, in spite of its apparent uniformity on the surface, these inequalities of soil produce differences in the crop quite as great as any produced by manuring.

One of the original objects of the experiment was to try the effect of applying dung at different points in the rotation, or of dividing the dressing of dung and giving half of it before turnips and the other half with hay. Each of the plots on which these different systems of dunging were tried, was in triplicate. It was found that no serious and consistent differences were produced throughout the rotation by applying the same amount of dung at different points in the rotation. On the whole, however, it was found that crops dressed with dung were better than those which received artificials only, even in cases where heavy dressings of artificials were given. This was particularly true of the hay crop. The effect of dung, even when it had been applied to the turnip crop two years before the hay, was always very marked upon the hay crop, and especially upon the growth of red clover. The dunged plots can almost with certainty be picked out from those which had received artificials only, by the growth of red clover upon them. The turnip crops which received dung were also heavier than those which received none, especially in the case of the unlimed plots. The differences were not so great in the case of grain crops.

A comparison of the limed with the unlimed sub-plots is given in Table IV. A similar table was included in the 1926 paper, but this one carries the results up to date.

TABLE IV.

ROTATION EXPERIMENT, SOUTH MEETHILL FIELD, 1914-1929.

Effect of Dung and Lime.

Yield per acre.

			Dung applied at different times.		Dung applied to Turnips.		No Dung.	
			Standard Artificials.		Different Artificials.		Different Artificials.	
			Limed.	Unlimed.	Limed.	Unlimed.	Limed.	Unlimed.
Number of Plots Averaged.			12	12	6	6	18	18
Crop.	*Year.*		Tns. cwt.	Tns. cwt.	Tns. cwt.	Tns. cwt.	Tns. cwt.	Tns. cwt.
Turnips .	1914		13 6	14 18	12 3	12 11	8 18	7 18
	1921		20 13	21 10	19 1	21 6	19 4	18 17
	1927		19 3	18 15	19 7	20 5	17 6	17 0
	Average		17 14	18 8	16 17	18 1	15 2	14 12
			cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Barley . .	1915	Grain	22·3	22·5	27·2	23·5	24·4	21·4
		Straw	38·9	35·3	39·7	37·4	39·1	33·5
Oats . .	1919	Grain	37·6	43·4	32·6	39·6	38·8	37·5
		Straw	27·5	32·0	28·0	35·5	30·3	31·7
	1920	Grain	32·2	36·4	29·9	34·0	33·4	34·9
		Straw	37·0	42·6	34·4	38·6	39·7	41·1
	1922	Grain	29·3	30·1	28·6	30·8	23·5	23·1
		Straw	34·5	33·8	31·6	34·6	28·8	26·3
	1926	Grain	36·8	38·0	34·0	36·2	32·0	31·1
		Straw	35·5	37·2	37·6	39·9	34·4	33·7
	1928	Grain	36·6	34·2	31·1	29·5	30·4	31·3
		Straw	41·8	34·1	36·6	37·0	35·7	33·8
	Average	Grain	34·5	36·4	31·2	34·0	31·8	31·6
	Average	Straw	35·3	36·0	33·6	37·1	33·7	33·3
Hay . .	1916		45·2	51·4	55·1	57·1	38·0	34·5
	1923		60·8	61·4	54·1	58·8	37·8	27·0
	1929		42·3	38·9	39·3	37·3	31·3	28·1
	Average		49·4	50·6	49·5	51·1	35·7	29·9

Lime was applied to all limed plots in 1914, and again in 1918, at the rate of 4 tons of carbonate of lime per acre. The carbonate of lime used was a by-product from the paper works and contained about 75 per cent of carbonate of lime, which means that the two dressings supplied carbonate of lime at the rate of 6 tons per acre. This would equal a dressing of about 3⅓ tons of pure calcium oxide per acre.

The actual manures applied to the different plots were detailed in the 1926 paper. "Standard artificials" means a good all-round dressing of artificial manures which was all applied to the turnip crop. In the second section of the table dung was applied to the turnip crop on each plot and artificials were applied at different rates varying from none at all to a heavy dressing which was given partly to the turnip crop, partly to the grain crop which followed turnips, and partly to the hay crop. In the third section of the table, no dung was applied, but artificials were applied to the turnip crop. These vary from a moderate dressing to a heavy all-round dressing of artificials. In every case the figures in the table represent the average obtained from a number of plots distributed over the area; this is necessary on this soil in which individual plots give such very variable results.

With turnips and with hay the application of dung increases the crop considerably. No matter what artificials were given, it was found that on the average a dressing of dung and artificials gave a heavier turnip crop than artificials alone. Still more remarkable are the results with hay. As a rule the dung was applied to the turnip crop. In the plots averaged in the second section of the table the dung was in every case applied to the turnip crop, yet on the hay two years later the effect of the dung was quite marked even on those plots which were heavily dressed with artificials. It will be seen that in each year in which hay was grown the average crops obtained from the dunged plots are much heavier than the average crops obtained from plots which received artificials only. This result was in large part due to the heavier growth of red clover upon all plots which received dung. While the hay crop was growing one could pick out the plots which had received dung by the heavier growth of the red clover upon them as compared with the plots which received no dung.

On the other hand, the grain crops were not so greatly affected by the presence or absence of dung. Barley was grown in one year only, 1915, and although it was grown in the year immediately following the application of dung to the turnips, generally speaking, the crops were as heavy on the undunged plots as on the dunged plots. With oats the dunged plots have on the average a certain advantage, though the difference is not so striking as in the case of hay.

It was pointed out in the 1926 paper that, where dung was applied, the limed plots in the case of turnips, oats and hay give a smaller crop than the unlimed plots. These are all crops which are not prejudiced by a moderate degree of acidity in the soil. Barley, on the other hand, is a crop which grows best on a soil which is neutral or nearly neutral, and on barley it is noticeable that the addition of lime gives on the whole an increased crop. No lime has been applied since 1918 and the effect of the lime is gradually wearing off. In the turnip crop taken in 1927 there is little difference between the average crops on the limed and the unlimed portions, while in the oat crop in 1928 and the hay crop in 1929 the limed portions give a heavier crop than the unlimed portions in every case.

The acidity of the soil was determined soon after lime was applied for the second time and was again determined recently. The limed portions were nearly neutral or only very slightly acid after the lime had been applied, while the unlimed portions were distinctly though only slightly acid, and had a pH value which averaged about 6. At the recent determination the acidity had increased somewhat both on the limed and on the unlimed portions. The limed portions have now become distinctly acid and have a pH value averaging about 6·15, while the unlimed portions average about 5·7 in pH value. It would seem then that with the increasing acidity of both the unlimed and limed portions, the limed portions have now reached a state in which they give rather better crops of oats and hay than the unlimed portions. The whole of this experiment has illustrated the fact that different crops require somewhat different reactions in the soil for their optimum growth, and that for most of the crops ordinarily grown in Scotland a moderate degree of acidity, represented by a pH value of about 6, is best.

It will be seen from the table that the plots which got no dung almost invariably gave a better crop when limed than when not limed. This is to be expected in the case of barley. In the case of turnips the reason appears to be that there was more finger-and-toe on the unlimed than on the limed plots.

In the case of oats there is little difference where no dung is applied between the limed and the unlimed portions. In the case of hay where no dung was applied the limed portions gave a distinctly better crop than the unlimed portions. It has already been pointed out that where no dung is applied there is much less red clover all over the plots, whether limed or unlimed, than where dung is used. It would seem then that on these plots where the growth of red clover was poor the use of lime has increased the growth of grass.

One of the main lessons we have learnt from this rotation experiment at Craibstone is the unreliability of field experiments in measuring differences between manurial applications. At an experimental farm like Craibstone the land for experiment can be chosen with some care, the experiments are constantly under the observation of skilled workers and the weighing and recording of the results is carried out by persons accustomed to such work; nevertheless, factors of soil, water supply, attack by pests and enemies, plant and animal, all of which are not under control, render the results of limited accuracy even when the plots are in duplicate or triplicate. How much less then are the results to be trusted of many of the field experiments which are carried on, up and down the country, on ordinary farms. Such results are of value only when they are very broad and striking, or when they are reduplicated a great number of times and give consistent figures all through; otherwise they require to be treated with great reserve.

TEST OF THE ACCURACY OF FIELD EXPERIMENTS.

The degree of reliance which is to be placed upon field experiments has frequently been tested with cereal crops, with root crops and with other crops. An opportunity for making such a test occurred in 1927. As the land of the farm of Craibstone is, generally speaking, uneven and unsuited for plot experiments, some fields adjoining Craibstone farm were acquired by the Governors of the College for experimental purposes. These Walton fields directly adjoin the estate of Craibstone and are more level than any of the land upon Craibstone. Observations of them while they were under ordinary crop showed that the crop was very uniform over the area. The soil was tested by boring in a large number of places, crossing and recrossing the fields, and found to be more uniform in depth and texture than the soil of Craibstone. It was decided, therefore, that these were the fields we required for experimental purposes and they were accordingly purchased for the College. In order to prepare one of these fields for a rotation experiment, under which it is now lying, it was cropped with potatoes as a cleaning crop; the potatoes were treated quite uniformly both as to cultivation and manuring. Three acres of the field were divided into 36 plots each $\frac{1}{12}$th of an acre in area. These were the plots which were afterwards to be used in the rotation experiment. The potato crop on each plot was lifted and weighed separately and the results are given in the table:—

[TABLE V.

TABLE V.

POTATO PLOTS. ALL EQUALLY TREATED.

Walton Field.

Yield per acre.

	1.		2.		3.		4.		5.		6.		7.		8.		9.		Average.	
	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.	Tons	cwt.
A.	8	14	8	19	9	12	8	12	10	0	9	17	9	13	9	4	9	10	9	7
B.	8	10	9	1	8	19	9	3	10	3	10	1	9	13	8	15	9	5	9	6
C.	10	6	10	1	10	6	10	3	11	5	11	5	10	8	9	16	10	6	10	8
D.	10	11	10	5	10	4	10	6	11	7	11	8	11	5	9	5	9	9	10	9
Average .	9	10	9	12	9	15	9	11	10	14	10	13	10	5	9	5	9	13	9	17

It will be seen from Table V. that the average crop of potatoes for the whole area was 9 tons 17 cwt., but it varied from 8 tons 10 cwt. on Plot B1 to 11 tons 8 cwt. on Plot D6. In other words, the crop varied from 14 per cent below the average on the lowest plot, to 16 per cent above the average on the highest plot. The plots were laid out in four rows of 9 plots each. If we take the averages of the rows of 9 plots we find that they vary from 9 tons 6 cwt. to 10 tons 9 cwt. Or, if we take the averages of each column of 4 plots they vary from 9 tons 5 cwt. to 10 tons 14 cwt. There are individual differences as great as 2 tons per acre in plots immediately adjoining one another. If a manuring experiment were laid out on this ground results from individual plots could not be depended upon as being due to the manuring unless the differences were very great, and even then the actual difference shown by two plots could not be entirely ascribed to the manuring, for it might be due in large part to the differences which normally occur between the results given by field plots which have been equally treated. It must be borne in mind, too, that this was a piece of ground which was almost level, and which, when carefully examined, appeared to be almost uniform in depth and quality, yet single plots are incapable of measuring any difference less than ± 15 per cent. Even if groups of plots are taken there is still a considerable difference in the averages given by different groups, say of four plots.

Similar results have been obtained at Rothamsted and at other stations where experiments have been made on plots which have all been treated equally, and the general conclusion which has been arrived at is, that individual field plots, and even duplicate and triplicate field plots, cannot be depended upon to measure small differences between different systems of manuring or different varieties of the same crop, and it is only when very broad and distinct differences are found, or when these are found consistently over series of plots, or over a number of different seasons, that any reliable conclusions can be drawn from such experiments.

NEW NITROGENOUS MANURES.

During the present century the trade in nitrogenous manures has been revolutionised owing to the introduction of new synthetic compounds prepared from the nitrogen of the air. The first of these to be introduced were cyanamide and nitrate of lime from Norway. Some account of these and of early field experiments made with them was given in the 'Transactions' in 1909.[1] Since the great war new nitrogenous manures have come to play a very much more important part in the markets, and in addition to cyanamide and nitrate of lime, nitrate of ammonia, chloride of ammonia and urea have all become ordinary articles of commerce. All these three later introductions are more concentrated than any of the manures which were in use before the war, and all of them are prepared synthetically from the nitrogen of the air. Another great change is in the position of sulphate of ammonia. Before the war sulphate of ammonia was a by-product derived from the destructive distillation of coal or shale; now it is produced in enormous quantities synthetically from the nitrogen of the air, with the result that nitrogenous manures, and especially sulphate of ammonia, have fallen greatly in price. Sulphate of ammonia is now produced in such quantities that the markets of the world are overstocked and, owing to the cheapness of sulphate of ammonia, these other new manures have not come into use so rapidly as was at one time anticipated.

---

[1] "New Nitrogenous Manures." By Professor Hendrick, B.Sc., F.I.C. 'Transactions of the Highland and Agricultural Society of Scotland.' Fifth Series, Vol. xxi., pp. 122-34.

Urea is the most concentrated and, in some respects, the most interesting of the new nitrogenous manures now upon the market. In the pure state, and the synthetic urea upon the market is nearly pure, it contains 46·7 per cent of nitrogen. Pure sulphate of ammonia contains 21·2 per cent of nitrogen and ordinary commercial sulphate of ammonia 20·6 per cent of nitrogen, so that urea contains considerably more than twice as much nitrogen as sulphate of ammonia. Ordinary commercial nitrate of soda contains 15·5 per cent of nitrogen, so that urea contains about three times as large a percentage of nitrogen as nitrate of soda.

Urea also occurs in nature in the urine of animals. The value of urine as a nitrogenous manure is largely due to the urea which it contains. In the soil urea quickly changes to carbonate of ammonia and acts like an ammonium salt. It is a dry white crystalline substance, which does not absorb moisture and become wet when exposed to the air, and which is quite stable so long as it is dry. It is a natural manurial substance without any objectionable properties, and its great concentration is to its advantage when carriage becomes an important consideration. One cwt. of urea supplies as much nitrogen as 2¼ cwt. of sulphate of ammonia, or 3 cwt. of nitrate of soda, and, therefore, is more economical in situations where carriage is heavy and costly. The samples of urea used in these experiments were almost pure and contained about 46 per cent of nitrogen.

Another very concentrated manure is nitrate of ammonia. In the pure state, it contains 35 per cent of nitrogen, and ordinary commercial samples of the synthetic product are nearly pure. The material used in these experiments contained from 34 to 34½ per cent of nitrogen. Half the nitrogen is present in the form of ammonia and half in the form of nitrate, hence this fertiliser has the properties of both ammonium salts and nitrates. It has a disadvantage that it is somewhat hygroscopic and becomes damp when exposed to moist air. Another disadvantageous property which restricts its popularity is that under certain conditions it is explosive, and in case of fire may be very dangerous. During the war it was extensively used in explosives. On account of the fact that it may explode under certain conditions it is not generally used as a fertiliser in the pure state, but in mixtures such as nitro-chalk. In nitro-chalk it is mixed with a large proportion of chalk, in which form it is quite safe.

Chloride of ammonia is prepared by combining ammonia with hydrochloric acid, just as sulphate of ammonia is prepared by combining it with sulphuric acid. It has long been known, and was tried as a fertiliser in the early days of the use of ammonia salts, but it is only recently that, owing to the cheap production of ammonia and hydrochloric acid, it has become cheap enough to compete in the fertiliser market with other nitrogenous manures. It is somewhat more concentrated than sulphate of ammonia and contains, when pure, 26·2 per cent of nitrogen. The material used in these experiments contained about 25·3 per cent of nitrogen. Chloride of ammonia is quite safe for use as a fertiliser; it is quite stable and is not hygroscopic. In its properties as a fertiliser it resembles sulphate of ammonia but is somewhat more concentrated.

Numerous experiments have been carried out at Craibstone with new nitrogenous manures upon various crops. Table VI. shows the average result obtained from duplicate experiments carried on for three years upon oats, so that the averages given are those of six plots during three seasons.

TABLE VI.

NEW NITROGENOUS MANURES ON OATS.

Crop per acre.

Average of Six Experiments. Duplicate Plots for Three Years.

	Grain. cwt.	Straw. cwt.
1. Sulphate of ammonia	29·3	34·7
2. Nitrate of soda	30·7	34·9
3. Urea	30·4	33·5
4. No nitrogen	24·3	30·0
5. Nitrate of lime	29·3	32·8
6. No manure	22·8	27·3
7. Nitrate of ammonia	31·8	35·8
8. Chloride of ammonia	31·4	34·8
Average of 6 plots with nitrogenous manure	30·5	34·4

Sulphate of ammonia was taken as the standard nitrogenous manure and applied at the rate of 1 cwt. per acre to Plot 1. The other manures were applied so as to give an equal dressing of nitrogen. All the plots except No. 6 received a dressing of 2 cwt. of superphosphate and 1½ cwt. of 30 per cent potash salt per acre.

The table shows that the addition of any of the forms of nitrogen, whether the old manures like sulphate of ammonia and nitrate of soda, or new manures like urea and nitrate of ammonia, give a good increase in both grain and straw. The average crop given by the plots when nitrogenous manure was applied was 30·5 cwt. of grain per acre, while Plot No. 4, which had no nitrogenous dressing but was manured with superphosphate and potash salt only, gave 24·3 cwt. per acre. The nitrogenous manures, therefore, produced on the average an increase of 6·2 cwt. of grain or 25·5 per cent. Similarly, with straw there was an increase of 4·4 cwt. or 14·7 per cent. These increases are sufficient to show with practical certainty that nitrogenous manures gave on the average a good increase of crop on this soil. The differences, however, between the different nitrogenous manures are comparatively small, and they vary considerably in different experiments and in different seasons. Bearing in mind what has been said above, it would be quite unsafe to conclude that any of these manures had shown a distinct superiority over the others. For instance, nitrate of ammonia has given a considerably heavier crop than sulphate of ammonia or nitrate of lime, but one would not be justified in concluding from this that nitrate of ammonia has any distinct superiority over sulphate of ammonia. One can conclude, however, that the new manures like nitrate of ammonia, chloride of ammonia and urea give, weight for weight of nitrogen, quite as good an increase with the oat crop as the better known old manures, sulphate of ammonia and nitrate of soda.

The next table gives the results of an experiment with new nitrogenous manures upon potatoes, which was carried out in duplicate. Sulphate of ammonia was applied at the rate of 2 cwt. per acre as the standard nitrogenous dressing, and the other nitrogenous manures were given in such quantity as to supply an equal weight of nitrogen. In this case nitro-chalk was tried in addition to the manures tried upon oats. Nitro-chalk is a mixture of nitrate of ammonia and chalk. All the plots received a dressing of superphosphate at the rate of 4½ cwt. per acre, and of muriate of potash at the rate of 1½ cwt. per acre. There were two plots, Nos. 2 and 6, which received no nitrogen.

TABLE VII.

NEW NITROGENOUS MANURES ON POTATOES.

Crop per acre.

Average of Duplicates.

	Tons	Cwt.
1. Sulphate of ammonia	14	18
2. No nitrogen	11	15
3. Urea	14	18
4. Nitro chalk	13	18
5. Nitrate of soda	14	16
6. No nitrogen	12	0
7. Nitrate of ammonia	15	19
8. Chloride of ammonia	14	13
9. Calcium cyanamide	13	2
Average of 7 plots with nitrogen	14	12
Average of 2 plots with no nitrogen	11	17½

In this experiment also the use of nitrogenous manures has in every case given a distinct increase in crop. The average crop has been increased nearly 3 tons per acre from the use of nitrogenous manures. Nitrate of ammonia again gives the biggest crop, but as this experiment is only in duplicate and for one season, it would be quite unsafe to conclude that on the average it would give any better result than nitrate of soda or sulphate of ammonia. The only nitrogenous manure which gives a result which is more than a ton below the average is calcium cyanamide. This result is so much below the others that there is some probability that calcium cyanamide does not give so good a return with potatoes as the other concentrated nitrogenous manures. This is in accordance with the result of experiments which have been carried out elsewhere.

Experiments with hay were carried out in duplicate during two seasons. The results are shown in Table VIII. Sulphate of ammonia at the rate of 1 cwt. per acre was the standard dressing, and the other nitrogenous manures were applied so as to give an equal amount of nitrogen per acre. Nitrogenous manures only were applied to the hay crop in these experiments.

[TABLE VIII.

TABLE VIII.

New Nitrogenous Manures on Hay.

Crop per acre.	Chapel Park. cwt.	Saw Pit. cwt.
1. Sulphate of ammonia	62½	42·1
2. Nitrate of soda	62¼	46·8
3. No nitrogen	59	39·6
4. Chloride of ammonia	63½	41·7
5. Nitrate of ammonia	66¼	45·5
6. Urea	68	43·0
Average of 5 plots with nitrogen	64·5	43·8

Here again any nitrogenous manure gives an increase in crop, but the proportion of increase differs in the two seasons. For instance, in one year nitrate of soda and sulphate of ammonia give almost the same crop, while in the other year nitrate of soda gives a considerably bigger crop than sulphate of ammonia. From these results, however, one would not be justified in concluding that either sulphate of ammonia or nitrate of soda can be expected on the average to give a better hay crop than that given by the other. Similarly, with the other nitrogenous manures all one can say is that there is little difference between them, but that on the average all of them may be expected to give a good increase with the crop of hay upon Craibstone soil.

CATTLE FEEDING.

RELATIVE VALUES OF SWEDES, POTATOES, DRIED SUGAR BEET PULP AND SILAGE IN BEEF PRODUCTION.

By Principal WILLIAM G. R. PATERSON, B.Sc., N.D.A. (Hons.),
The West of Scotland Agricultural College.

Since the transfer of the College's farming activities from Kilmarnock to Auchincruive, in May 1931, the greater opportunities for cattle feeding investigations, and the admirable facilities for work of this nature at that centre, have enabled a considerable amount of experimental work to be carried out, the results of which are summarised in this article.

The range of buildings for cattle feeding is 72 ft. long and 28 ft. wide. It is subdivided into 14 pens, 7 being on either side of the central feeding passage, which extends the entire length of the building and links up with food store, root store,

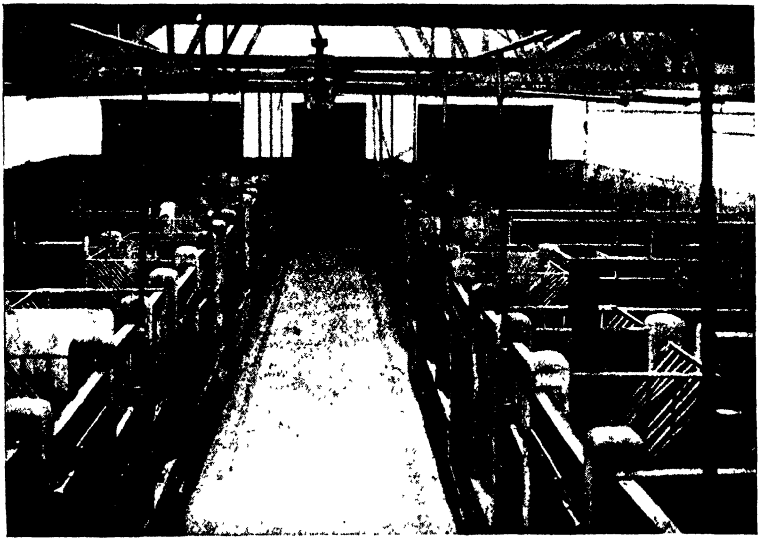


Fig. 1.—*The Cattle Feeding Pens.*

hay-shed, straw barn and weighing room, thereby simplifying the working and effecting great economy in labour.

Each pen is approximately 10 ft. square—inside measurements—and of sufficient size to accommodate two bullocks. The pens are equipped with two troughs and two hay racks, one trough and rack being on each side of the central doorway leading into the pen.

All of the feeding is done from the central passage and the cattle do not require to be disturbed except when fresh bedding is put down.

Each compartment is provided with a water bowl, the supply pipe to which is fitted with a water meter so that the amount of water taken by the cattle can be recorded.

The divisions between the pens are strong tubular iron swing gates which can be opened for the cleaning out of the boxes, thereby permitting the manure to be forked directly into the cart.

The floor of the compartment is well below the level of the feeding passage, and still farther below the feeding troughs, and this permits of the manure accumulating undisturbed under the feet of the cattle during a feeding period extending to 14 weeks or thereby. This method gives the richest of all farmyard manure, as the urine is entirely retained, being absorbed by the straw or other bedding supplied.

1. Swedes *versus* Potatoes.

In the ‘ Transactions ’ for 1931 an account was given of an experiment designed to ascertain the relative values of swedes and potatoes in beef production. In that trial potatoes were fed at the rate of 32½ lb. per bullock per day, that quantity being equivalent on the dry matter basis to 72 lb. swedes, and they were shown, when measured in terms of live weight increase, to have a money value per ton of well-nigh three times that of swedes. Further, there did not appear to be any real foundation for the opinion held by many that the beef from potato fed cattle was of inferior quality, as the reports submitted showed that no fault could be found in that connection, the quality of the beef being all that anyone could desire.

A further experiment with potatoes and swedes was carried through during the winter of 1932-33. On this occasion the quantity of potatoes fed was 40 lb. pèr animal and this allowance was compared with swedes supplying the same amount of dry matter.

The return per ton of potatoes consumed by stock depends on many factors, but is generally such that in a year of over-production it is sound policy to feed them liberally, not only because of the return per ton consumed but also on account of the material advantage that accrues from finding a fair market for part of the crop and thereby reducing the surplus, which always plays havoc with the current market price. With an over-supply there may be little or no demand for potatoes as such, but converted into beef, they at least find a ready sale and their utilisation for that purpose improves the prospects for the disposal of the remainder of the crop. The experiment under review was accordingly undertaken with the double purpose of encouraging a more liberal use of potatoes in cattle feeding during a year when there was a plentiful supply, and of gleaning still further information as to the return likely to be obtained per ton when utilised in that way.

The position as regards hay is, at the time of writing, in some respects very similar to that of potatoes. There appears to be an abundant supply for which there is a very poor demand, with the result that the current price per ton is very low. Hay, however, can be kept over a year without going wrong, and in that respect is in a different category from potatoes; nevertheless, it was deemed advisable to feed a liberal allowance of hay to the cattle and ascertain what return was likely to be obtained from it as well as from potatoes when both of these products were marketed in the form of beef. With the foregoing in view, the following feeding trial was carried out :—

Plan of Experiment.

Twenty-four (24) bullocks (20 Blue-greys and 4 Galloways) were selected out of a very pleasing group of 27 that were available. These were arranged in two groups of twelve, with 10 Blue-greys and 2 Galloways in each. The groups were also made as uniform as possible in all other respects.

The bullocks were housed in pairs in the cattle-feeding pens already described, the combined weight of the two bullocks constituting each pair being as nearly as possible the same in every case.

One group was housed in the pens on one side of the central feeding passage, and the other group in those on the other side.

After a few days preliminary feeding to get the cattle accustomed to the foods to be included in the rations they were fed as follows :—

Group I.—40 lb. potatoes.
16 lb. hay.
4 lb. concentrates.

Group II.—Swedes supplying an equivalent amount of dry matter to that contained in 40 lb. potatoes.
16 lb. hay.
4 lb. concentrates.

The concentrate mixture consisted of—

2 parts crushed oats.
1 part maize meal.
1 part decorticated ground-nut cake.

The variety of potato used was Kerr's Pink. The crop was fed as grown, and included small, medium and large tubers. The potatoes were particularly sound, but any diseased ones were rejected. They were fed whole and unwashed, but were always sieved to remove any dry soil adhering to them.

Just at first the liberal allowance of potatoes tended to cause the bullocks to scour rather badly, but this became gradually less pronounced as they got accustomed to them.

The swedes were of the Knockdon variety, and were cut into fingers before being fed. The dry matter content of the swedes was rather more than half of that of the potatoes, being 10·18 per cent for the former as against 19·3 per cent for the latter.

The quantities of potatoes and swedes fed were not altered during the trial except in so far as it was necessary to adjust the swedes in view of the slight variation in dry matter content. The allowance of concentrates, however, was increased by ½ lb. per bullock per day at the end of each two weeks in order to keep pace with the live weight increase of the cattle. It accordingly rose as indicated below from 4 lb. daily in the 1st and 2nd weeks to 6½ lb. daily in the 11th and 12th weeks of the experiment.

ALLOWANCE OF CONCENTRATES.

	Week of Experiment.					
	1st and 2nd.	3rd and 4th.	5th and 6th.	7th and 8th.	9th and 10th.	11th and 12th.
	lb.	lb.	lb.	lb.	lb.	lb.
Concentrates fed .	4	4½	5	5½	6	6½

The amount of concentrates fed represented an average daily allowance over the 12-week period of 5¼ lb. per animal per day or just under 4 cwt. for the duration of the experiment. Of this amount, approximately 2 cwt. were home grown oats and a similar amount purchased concentrates. The outlay for feeding stuffs was accordingly very little, as the farm contributed the whole of the ration with the exception of 1 cwt. maize meal and 1 cwt. decorticated ground-nut cake for each bullock.

The average live weight of the cattle in each group at the beginning and end of the trial, the average live weight increase for the period of the experiment and the average daily increase are summarised below :—

	Average Live Weight at		Average Live Weight increase	
	Beginning of Experiment.	End of Experiment.	per Bullock for period.	per Bullock per day.
	lb.	lb.	lb.	lb.
GROUP I.—*Potatoes* .	918	1094	176	2·1
GROUP II.—*Swedes* .	918	1077	159	1·9

The cattle were purchased by Mr Tinch, fleshing manager of the Kinning Park Co-operative Society Limited, Glasgow. The transaction was on a dead weight basis as first-hand information was desired as to the effect of such a liberal ration of potatoes on the quality of the beef and the per cent of carcass weight to live weight.

In this connection, invaluable assistance was rendered by the buyer and his staff, and every opportunity given for examining and comparing the carcasses from the potato and swede rations. The average live and dead weights of the cattle in each group and the per cent of carcass weight to unfasted live weight were :—

	Average Live Weight.	Average Dead Weight.	Carcass Weight to Unfasted Live Weight.
	lb.	lb.	%
GROUP I.—*Potatoes*.	1094	613·5	56
GROUP II.—*Swedes*.	1077	618·8	57·4

There appeared to be very little difference in the two groups and no fault whatever could be found with any of the carcasses, but a number of the livers had to be discarded on account of invasion by the liver fluke.

After the cutting up and disposal of the meat Mr Tinch submitted the following brief report on the 24 bullocks included in the experimental groups :—

1. Weight of bullock—very handy.
2. Quality of bullock—nice.
3. Potato fed—inclined to whiteness and more fatty.
4. Turnip fed—juicier and not so wasteful.

(Signed) ROBERT TINCH, *Fleshing Manager.*

It is interesting to find that Mr Tinch makes special reference to the whiteness of the fat in the potato fed group. This is of importance and goes to show that the popular idea of many as to potato fed cattle producing fat of a very yellow colour is evidently quite erroneous. Further, it is clear from his concise summing up, that the quality of the beef from both groups was entirely satisfactory, though the potato fed group apparently showed a higher percentage of fat in the carcasses and thus gave rise to rather more waste.

Water taken by the Two Groups of Cattle.

This was very carefully recorded over the entire feeding period by fortnightly readings of the water meters for each pen. In addition, daily readings were taken for the last four weeks of the experiment to ascertain—

1. What variation, if any, took place from day to day, and
2. Whether the requirements in the way of water rose or fell as fattening progressed.

The average daily amount of water taken from the water bowls during the entire feeding period was found to be as follows :—

Group on potato ration, an average of 6·07 gallons per bullock per day.
Group on swede ration, an average of 2·55 gallons per bullock per day.

When due allowance is made for the amounts of moisture in the potatoes and swedes fed to the respective groups, the average total amounts coincide very closely, as the potato group of cattle getting less water in their ration took correspondingly more from the water bowls.

The dry matter and water contents of the potatoes and swedes as ascertained prior to the commencement, and during the progress of the trial, were, on the average of three analyses, found to be as stated below, and when taken into account the total water consumpt is arrived at, being as indicated.

WATER CONSUMPT PER ANIMAL.

Ration.	Dry Matter.	Water.	Water in		Average Amount of Water from Bowls.	Total Amount of Water per Bullock.
			40 lb. Potatoes.	76 lb. Swedes.		
	%	%	Gallons.	Gallons.	Gallons.	Gallons.
Potatoes .	19·30	80·70	3·23	—	6·07	9·30
Swedes .	10·18	89·82	—	6·83	2·55	9·38

It will be seen from the above that when allowance is made for the amount of moisture in the swedes and potatoes the water consumpt per animal was approximately 9⅓ gallons.

The dry matter content of the potatoes used in the experiment was much lower than that of those fed in the trial carried out during the winter of 1930-31, being 19·3 per cent as against 23·24 per cent. In that trial 72 lb. swedes supplied the same amount of total dry matter as 32½ lb. potatoes, but in this one it only required 76 lb. swedes to replace 40 lb. potatoes.

The total amount of water taken by the bullocks is in close agreement with that arrived at in previous trials, and goes to show that feeding cattle evidently require the equivalent of approximately one gallon of water per cwt. live weight, and that with free access to it they will supplement what is contained in the ration till that amount is reached.

The daily readings taken over the period of one month would seem to indicate that there is great variation in the amounts taken from day to day, the average minimum and maximum amounts for the 12 bullocks in each group being as follows :—

	Potato Group. Water Consumpt.		Swede Group. Water Consumpt.	
	Minimum Gallons.	Maximum Gallons.	Minimum Gallons.	Maximum Gallons.
Amount from water bowls	2·33	9·83	1·50	3·83
Amount in ration . .	3·23	3·23	6·83	6·83
Total . .	5·56	13·06	8·33	10·66

It will be readily apparent from the foregoing that there is considerable variation in the amount of water taken by the cattle from day to day, and in that connection it is worthy of note that the variation was much greater for the potato group than for the swede fed group of cattle.

The amount of water taken by cattle would appear to fall slightly as fattening progresses, though the difference is not very pronounced. The average daily amount taken from the water bowls over the entire feeding period was for the potato group 6·07 gallons and for the swede group 2·55 gallons. The amounts for the last four weeks of the trial, however, were below these averages, being for the potato group 5·63 gallons and for the swede group 2·49 gallons. These figures would seem to indicate that there is a slight decrease in the amount of water taken by cattle as they approach the ‘ prime ’ stage.

Amount of Farmyard Manure Produced.

On the conclusion of the trial the cattle pens were cleaned out in preparation for another group and the dung, which had just been allowed to accumulate during the trial, was weighed as it was carted out. The amount per bullock from the potato group for the 12-week period was 78 cwt., or 26 cwt. per month, and from the swede group 66 cwt., or 22 cwt. per month.

The latter figure coincides almost exactly with the amount obtained in previous tests. The larger quantity from the potato fed group was doubtless due to the fact that in view of the greater tendency of the cattle to scour when first given a daily allowance of 40 lb. potatoes, considerably more bedding had to be supplied to keep them clean.

On analysis the composition of the farmyard manure was found to be as follows :—

	Dry Matter.	Nitrogen.	Phosphoric Acid.	Potash.
	%	%	%	
Potato Ration .	21·46	0·396	0·235	0·634
Swede Ration .	26·5	0·537	0·266	0·685

It will be apparent from these figures that the potato ration has given manure much lower in dry matter and poorer in nitrogen than that from the swede ration. Nevertheless, when allowance is made for the greater quantity of manure per bullock on the potato ration—namely, 78 cwt. as against 66 cwt. for the swede ration, it will be observed that the total amounts of dry matter and of nitrogen in the manure from the two groups of cattle do not differ very materially. These are as indicated below :—

Ration.	Total Dry Matter in Manure per Bullock.	Total Nitrogen in Manure per Bullock.
	Cwt.	lb.
Potatoes	16¾	34·6
Swedes	17½	39·7

Financial aspect of the Experiment.

There was a margin of £6, 1s. per head betwixt the inbuying and the selling prices of the cattle, the cost being £16, 15s.

and the price realised £22, 16s., and this margin may be taken as representing the return for the foods consumed during the trial. The value of the dung, the amount and composition of which has already been stated, is more than sufficient to cover cost of bedding and labour of feeding, and these items may accordingly be left out of account. The amounts of the various foodstuffs consumed per animal were as follows :—

Potato Group.—30 cwt. potatoes; 12 cwt. hay; 4 cwt. concentrates.
Swede Group.—57 cwt. swedes; 12 cwt. hay; 4 cwt. concentrates.

If we charge the hay at 45s. per ton and the concentrates, half of which were home grown oats, at £6 per ton, this leaves 46s. 8d. *per ton for the potatoes fed to the cattle and marketed as beef.*

On the same basis, the return per ton of swedes works out at fully 24s. 6d.

These figures go to show that when potatoes are plentiful and cheap it may prove sound policy to utilise them in the production of beef.

One may also conclude that as much as 40 lb. per day may be fed to medium sized fattening cattle without any harmful effects.

II. Swedes *versus* Dried Sugar Beet Pulp.

This experiment, designed to give further information regarding the relative values of swedes and sugar beet pulp in beef production, was carried out in the winter of 1931-32.

Twenty-four (24) Blue-grey bullocks of rather exceptional quality were utilised for the trial. They were divided into three groups with eight animals in each and so arranged that the groups were as nearly as possible alike in all respects. It was thought, however, that on the whole, Groups I. and III. were, if anything, perhaps just a little superior to Group II.

The average live weight of the cattle in each group at the commencement of the trial was almost exactly 9¼ cwt. and they were, therefore, considerably heavier than those employed in the experiment just reviewed.

The rations fed to the cattle were as indicated below.

Group I.—72 lb. Swedes.
10 lb. Hay.
6 lb. Straw.
7 lb. Concentrates.

Group II.—36 lb. Swedes.
6 lb. Dried Beet Pulp.
10 lb. Hay.
6 lb. Straw.
7 lb. Concentrates.
Group III.—12 lb. Dried Beet Pulp.
10 lb. Hay.
6 lb. Straw.
7 lb. Concentrates.

The concentrate mixture consisted of 4 parts crushed oats, 2 parts decorticated ground-nut cake and 1 part linseed cake. The amount fed was increased by ½ lb. each fortnight and rose to 9 lb. in the 9th and 10th week of the trial. The protein content of the ration was well above theoretical requirements, and but for the very excellent progress made by the cattle might be considered a little wasteful.

The dry matter content of the swedes fed to the cattle was 10·17 per cent and that of the dried sugar beet pulp, which was of the non-molassed type, 85·5 per cent.

The equivalent of 72 lb. swedes in terms of beet pulp on the dry matter basis would have been 8·57 lb. Beet pulp, however, was very moderate in price at the time the quantity required for the trial was purchased, having been delivered at the College Farm at 85s. per ton, and in view thereof it was felt that a *direct comparison on a cost basis* might serve a more useful purpose than a comparison of the rations on the dry matter basis, hence the decision to feed the rations indicated above.

It will be observed that with beet pulp at 85s. per ton, and on the basis of one part of beet pulp to six of swedes, the relative value of the swedes has been taken as just over 14s. per ton. On many farms they can be produced at that figure, and occasionally under it, but on other farms the cost of production is often very much higher.

In most cattle feeding work with beet pulp it had been customary to thoroughly moisten it, prior to feeding, but, despite the large amount used in this trial, it was all fed dry, as accurate rationing is greatly simplified when dry feeding is the method adopted. The cattle had, of course, access to water at all times, and as the 12 lb. of beet pulp was given in three feeds of 4 lb. each, these, doubtless, were factors contributing to the result obtained.

At first, a little of the concentrates were added to the beet pulp to get the cattle to take to it, but very soon they cleared it up and seemed to relish it, and thereafter during the entire experiment there was no difficulty in getting them to take the full allowance.

The bullocks used for this experiment were well forward in condition at the time the trial commenced, and as the rations fed were liberal, the majority of them were practically 'prime' at the end of a 10-week feeding period when the experiment was terminated.

The average live weights of the cattle in each group at the beginning and end of the experiment and the live weight increases were as follows :—

Rations.	Average Live Weight at		Average Live Weight Increase	
	Beginning of Experiment.	End of Experiment.	per Bullock for period.	per Bullock per day.
	lb.	lb.	lb.	lb.
Group I.—*Swedes* .	1043	1225	182	2·60
Group II.—*Swedes and beet pulp* .	1043	1216	173	2·47
Group III. — *Beet pulp* . . .	1041	1227	186	2·66

The daily live weight increases for all the cattle are remarkably good and in that respect the three groups may be said to be practically equal. The bullocks comprising Group III., however, were undoubtedly even better finished than the others, being ready for the market at least a week before the trial concluded.

A consignment of 12 bullocks, four from each group, was sold to Messrs Geo. Guthrie & Son, Glasgow, and six bullocks, two from each group, to Brechin Brothers, Glasgow. All of these were sold on the dead weight basis in order that information might be obtained as to the effect of the rations on the quality of the meat and the carcass weight. The other six bullocks included in the trial were marketed locally on the hoof.

The average live and dead weights of the six bullocks from each group sold on the dead weight basis are given below; the per cent carcass weight to unfasted live weight is also shown :—

Rations.	Average Live Weight.	Average Dead Weight.	Carcass Weight to Unfasted Live Weight.
	lb.	lb.	%
Group I.—*Swedes* .	1288	729	56·6
Group II.—*Swedes and beet pulp* .	1262	716	56·7
Group III. — *Beet pulp* . . .	1279	737	57·6

The percentage of carcass weight to live weight may appear rather low for well finished cattle, but it should be noted that these percentages are relative to unfasted live weight, which makes a very big difference. On the assumption that the cattle on being fasted lose ¾ cwt. in weight, this would represent a difference of 4 per cent in carcass weight and would put the percentages for all the groups well over 60.

In every case the beef was found to be of excellent quality, all carcasses being classified as first grade.

The dried beet pulp ration did not appear to influence adversely the colour of the carcass, and as already indicated the animals in Group III. were undoubtedly rather fatter than those in Groups I. and II.; indeed, they were criticised as being rather over-fat for present-day requirements.

The beet pulp certainly contributed to very rapid fattening, and that is a matter of importance as the shortening of the feeding period effects considerable saving.

The following particulars relative to the 12 cattle sold to Mr Guthrie were very kindly supplied by him. Unfortunately, in view of the prevalence of liver fluke, the majority of the livers were rejected and the weights of these are consequently not available.

	Weight of					Broad Teeth
	Hide	Fat.	Tongue	Heart	Head	
	lb.	lb.	lb.	lb.	lb.	Number
GROUP I.—						
Bullock No. 1 . .	74	55	7	4½	28	2
" 3 . .	79	52	7¾	4½	26	6
" 6 . .	67	45	7½	4¼	26	2
" 8 . .	79	53	7½	4¾	25	4
GROUP II.—						
Bullock No. 1 . .	74	47	7¼	4¾	25	4
" 3 . .	61	49	7½	4	29	6
" 6 . .	75	42	8¼	5	26	4
" 8 . .	72	52	7	5	26	4
GROUP III.—						
Bullock No. 1 . .	68	52	6½	4	26	4
" 3 . .	75	52	7	5¼	23	2
" 4 . .	70	52	7	4½	24	4
" 7 . .	73	52	8	3¾	27	4

Water taken by the Different Groups.

The amounts of water in the swedes and the beet pulp fed to the cattle were 89·83 per cent in the former and 14·5 per cent in the latter. When allowance is made for the moisture content of these foods and the quantity taken directly from the water bowls the total for each group of cattle is as follows :—

GROUP I.		
Swedes.	Water in 72 lb. Swedes	6·57 gallons.
	Water from water bowls	2·96 „
	Total per bullock per day	9·53 gallons.
GROUP II.		
Swedes and Beet Pulp.	Water in 36 lb. Swedes	3·28 gallons.
	Water in 6 lb. Beet Pulp	·09 „
	Water taken from water bowls	5·43 „
	Total per bullock per day	8·80 gallons.
GROUP III.		
Beet Pulp.	Water in 12 lb. Dried Beet Pulp	0·17 gallons.
	Water taken from water bowls	8·36 „
	Total per bullock per day	8·53 gallons.

It will be seen from these amounts that the cattle getting the full ration of swedes took on the average one gallon of water more per day than those on the dried beet pulp ration. These figures tend to confirm those from previous experiments with rations containing 80 lb. swedes, 40 lb. swedes and no swedes, and on which the cattle took respectively 10 gallons, 8·75 gallons and 8·66 gallons (H. & A. S. 'Transactions,' 1930.)

Amount of Farmyard Manure Produced.

On the conclusion of the experiment the boxes were cleaned out, all of the manure being weighed. The average amount for the cattle comprising the three groups was found to be approximately 22 cwt. per bullock per month.

This amount is similar to that for the cattle on the swede ration in the Potato *versus* Swede Experiment already dealt with.

The Financial Result.

The average inbuying price of the cattle utilised for this experiment was £20, 5s. and the average selling price on the conclusion of the experiment, £25, 16s. 8d., which leaves a margin per bullock of £5, 11s. 8d.

This margin, though perhaps not quite all that one would desire, is nevertheless sufficient to return good prices for the home grown foods sold to, and consumed by, the cattle, and marketed in the form of beef.

As a result of the foregoing trial, it may be concluded that in beef production 72 lb. swedes can be successfully replaced by 12 lb. dried beet pulp. The beet pulp tends to fatten the cattle more rapidly, to give a slightly higher carcass weight, and has no adverse effect on the colour or quality of the beef.

III. Sugar Beet Pulp *versus* Silage.

This experiment was undertaken on the conclusion of the one just dealt with, young Aberdeen-Angus and Shorthorn-Angus Cross bullocks and heifers being utilised for the trial in place of the usual Shorthorn Galloway Crosses.

The cattle were purchased at Aberfeldy at the Opening Store Cattle Sale in the end of February, many of them being little more than a year old at that time. The purchases consisted of 8 bullocks and 16 heifers, and were a pleasing and uniform lot. They were divided into two groups of 12, each group consisting of 4 bullocks and 8 heifers. The groups were also made as uniform as possible in all other respects.

The feeding trial commenced on 8th March 1932 and was continued for a period of 12 weeks, terminating on the 31st May, by which time all of the cattle were ready for slaughter.

The silage used in the feeding trial was made in a modern tower silo 52 ft. in height and 14 ft. in diameter.

The seeding for the crop ensiled consisted per acre of 120 lb. Crown Oats, .60 lb. Kilbride Beans, 30 lb. Swedish Vetches and 30 lb. Tasmanian Maple Peas.

This seed mixture was sown in the end of March, but the proportion of beans in the resulting crop was much lower than generally resulted from similar seedings on the stronger soils of the former College Farm at Kilmarnock.

The crop was cut and carted when fairly dry, with the result that there was very little moisture pressed out, indeed, there was practically no seepage from the silo.

The cured silage was slightly brown in colour, the aroma rather pleasant, and from the way the cattle took to it the material was evidently very appetising. This silage was on the whole considered much superior to what had been the result in former years, with beans much more prominent in the crop, and this seeming failure, instead of being a drawback, actually proved a decided advantage.

Experimental Rations.

It was decided to adjust the beet pulp and silage rations on a dry matter basis, and as the dry matter content of the beet pulp used at the commencement of the experiment was 85·5 per cent and of the silage 25·6 per cent, 3 lb. of beet pulp were exactly equivalent to 10 lb. silage.

After a short preliminary period, during which the cattle were gradually accustomed to the foods to be tested, they were put on to the following rations :—

Group I.— 9 lb. Dried Beet Pulp.
10 lb. Hay.
5 lb. Concentrates.

Group II.—20 lb. Silage.
3 lb. Dried Beet Pulp.
10 lb. Hay.
5 lb. Concentrates.

Both groups were given a liberal allowance of oat straw as bedding, a little of which was eaten.

The intention at first was to give Group II. 30 lb. silage, that quantity being equivalent in total dry matter content to 9 lb. dried beet pulp. From the outset, however, it was clear that 30 lb. silage, in addition to the concentrate and hay allowance, was too bulky for cattle weighing only about 7 cwt., and though the cutting down of the silage to 20 lb. and the introduction of 3 lb. dried beet pulp obscured the issue a little, that appeared on the whole to be the better method of adjusting the rations. The beet pulp as in the previous experiment was fed dry.

One very noticeable feature of the experiment was the fact that, though both rations supplied exactly the same amount of total dry matter, the silage ration on account of its greater bulk was evidently the more satisfying, and the cattle thereon never quite cleared up their full hay allowance. In view thereof, the quantity of hay for the silage group was reduced to 8 lb. and ultimately to 7 lb.

The concentrate mixture consisted of 3 parts crushed oats, 1 part maize meal, 1 part decorticated ground-nut cake and 1 part linseed cake. The initial daily allowance of 5 lb. was increased by ½ lb. at the end of each fortnight, and accordingly rose from 5 lb. in the 1st and 2nd weeks to 7½ lb. in the 11th and 12th weeks of the experiment. The amount per animal represents an average daily allowance of 6¼ lb. over the entire period, or a total of just a little under 4¾ cwt. per animal, one half of which was home grown oats. The outlay for concentrates was accordingly very small.

Apart from the weighings at the beginning and end of the trial, fortnightly weighings were carried out during the entire progress of the experiment.

The average live weight at the beginning and end of the trial and the live weight increases for the cattle comprising the two groups were as follows :—

Rations.	Average Live Weight at		Average Live Weight Increase	
	Beginning of Experiment.	End of Experiment.	per Bullock for period.	per Bullock per day.
	lb	lb.	lb.	lb.
GROUP I.—*Beet pulp*	791	979	188	2·23
GROUP II.—*Silage* .	792	961	169	2·01

It will be seen from the foregoing that the cattle on beet pulp made rather better progress than those on silage. The results were very consistent for the entire group as the individual figures in the Appendix show.

In this connection the fact should not be overlooked that the silage group were actually fed rather less total dry matter per day, the difference in the amount of hay consumed being 3 lb. The starch equivalent value of 3 lb. good hay is almost 1 lb. and the hay ration for Group II. lower than that for Group I. by that amount.

On the conclusion of the trial all of the cattle were sold to Messrs George Guthrie & Son, Glasgow, on the dead weight basis in order that information might be obtained as to the effect of the silage on the quality of the beef and on the carcass weight. Confirmation of the opinion already formed regarding beet pulp was also desired.

The average live and dead weights of the 12 animals in each group are given below, also the percentage of carcass weight to unfasted live weight.

Rations.	Live Weight.	Dead Weight.	Carcass Weight to Unfasted Live Weight.
	lb.	lb.	%
GROUP I.—*Beet pulp*	979	566	57·8
GROUP II.—*Silage* .	961	553	57·5

There is a belief that silage fed cattle are often rather disappointing when killed, but in this experiment there was practically no difference in the per cent of carcass weight to unfasted live weight in the two groups, and when due allowance is made for the fact that the percentages given are relative to unfasted live weight, it must be concluded that both groups killed remarkably well.

Information very kindly furnished by Mr Guthrie showed that the beet pulp group gave a rather greater amount of internal fat, the average being 35·5 lb. as against 31·6 lb. for the silage group. The average weight of hide, on the other hand, was lower, being 51 lb. for the beet pulp group and 55·6 lb. for the silage group.

Full particulars relative to carcass weight, hide, fat, liver, &c., as supplied by Mr Guthrie, are given in Table on next page.

Water taken by the Cattle.

As in the other trials the amount of water taken by the cattle was carefully recorded, and when allowance is made for the moisture in the beet pulp and silage the amount for each group was as follows :—

GROUP I.		
Beet Pulp.	Water in 9 lb. Beet Pulp . . .	·13 gallons.
	Water taken from water bowls . .	6·62 ,,
	Total per animal per day .	6·75 gallons.
GROUP II.		
Silage.	Water in 20 lb. Silage . . .	1·48 gallons.
	Water in 3 lb. Beet Pulp . . .	·04 ,,
	Water taken from water bowls . .	4·89 ,,
	Total per animal per day .	6·41 gallons.

The above amounts are rather less than those recorded for the other groups of cattle. The animals under consideration, however, were not quite up to the same weight; further, it is possible that the water requirement of the Angus and Angus Cross may be actually less than that of the Galloway Cross, on account of the difference in the skin and hair.

From the foregoing experiment one may conclude that on the dry matter basis there is comparatively little difference in the relative values of dried beet pulp and silage in beef production.

IV. Ordinary Silage *versus* A.I.V. Silage.

This experiment is, at the time of writing, still in progress. It was undertaken in order to get first-hand information as to the relative values of ordinary and A.I.V. silage, the former being material of the nature already described and the latter ryegrass and clover aftermath, cured by the Finland process in a small silo sunk into the ground and covered over with a heavy layer of soil.

Group.	Expt. Animal No.	Remarks.	Weight of								No. of Teeth.
			Carcase.			Hide.	Fat.	Tongue.	Liver.	Heart.	
			cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	
GROUP I. *Beet Pulp.*	BULLOCK :										
	1	Good.	5	1	10	48	34	6½	11	5	2
	2	Good.	5	1	2	55	35	6	12	3¼	0
	3	Good.	5	3	11	64	41	5½	13	3½	2
	4	Good.	5	0	17	56	36	6	10	3¾	0
	HEIFER :										
	5	Good (well clad).	5	2	2	52	46	Cond.	11	4	2
	6	Good (lean).	4	1	10	41	26	4¼	9	3¼	0
	7	Good.	5	2	8	52	27	Cond.	Cond.	4	2
	8	Good.	4	1	19	41	29	4¼	9½	3½	0
	9	Fair.	5	1	3	54	40	5	9½	3½	2
	10	Fair.	4	2	7	52	28	5	11½	4¼	0
	11	Good.	4	2	26	47	48	Cond.	9½	3¾	0
	12	Good.	4	2	11	50	37	4	11	3½	0
Average .			5	0	6	51	35·5	5·1	10·6	3·7	
GROUP II. *Silage.*	BULLOCK :										
	1	Good.	4	3	13	56	33	4¼	11	4	2
	2	Good.	5	2	20	65	32	4	11½	3½	0
	3	Plainer.	5	1	4	71	38	4¾	11	3¾	0
	4	Good (lean).	5	0	20	69	34	6	11	4	2
	HEIFER :										
	5	Good (well clad).	5	1	24	52	39	6	11	3¼	2
	6	Good.	4	0	27	45	24	4	8	2½	0
	7	Good.	5	1	0	52	39	6¼	10¾	3½	2
	8	Good.	4	1	20	47	24	4½	9½	3	0
	9	Fair.	5	0	16	54	36	5	11	2¾	2
	10	Fair.	4	2	9	48	24	5	10	3¼	0
	11	Good.	4	1	25	58	21	Cond.	9¾	3½	0
	12	Good.	4	2	22	51	36	4¼	Cond.	3¼	0
Average .			4	3	21	55·6	31·6	4·9	10·4	3·3	

There are again two groups of cattle in the experiment with 12 animals in each, and the two types of silage are being compared on the dry matter basis. The investigation, however, is scarcely sufficiently far advanced to enable one to form a definite opinion as to the relative merits of these two foods. All that can be stated is that both groups of cattle have done remarkably well. For the first six week period the average weekly live weight increase for the cattle on the ordinary silage has been 15·9 lb. per bullock and for those on the A.I.V. silage 16·1 lb. Although the experiment has been only of short duration these live weight increases would seem to indicate that A.I.V. silage, if utilised for beef production, is likely to prove at least equal to ordinary silage when compared on the dry matter basis.

Some Conclusions from the foregoing Experiments.

The value of swedes in beef production has been repeatedly demonstrated and is well known, but the fact is often overlooked that potatoes are also very useful for this purpose, and when plentiful and bringing low prices for table purposes may often be marketed to better advantage in the form of beef.

Up to 40 lb. per day may be fed to medium-sized cattle without any risk to the animals or adverse effect on the quality or colour of the beef produced.

Cattle receiving a liberal ration of potatoes and good ryegrass and clover hay can be fattened in a normal feeding period with a relatively small outlay for concentrates.

The dry matter content of the potato would seem to be a fairly reliable measure of its value relative to swedes, and on that basis potatoes will successfully replace swedes in a ration for fattening cattle.

Dried Sugar Beet Pulp is of special value where swedes, potatoes, &c., are not available, and 12 lb. of beet pulp will effectively replace 72 lb. swedes.

The beet pulp can be fed dry without any bad effects, provided the cattle have access to water. It tends to fatten rapidly, to give excellent quality and high carcass weight.

On a dry matter basis silage is almost as valuable as beet pulp, and if fed in moderate amount cattle make excellent progress thereon, quality and carcass weight being entirely satisfactory

Any of the foregoing foodstuffs can be usefully employed in beef production, and the following are approximate quantities for the replacing of one food with another :—

Swedes, 20 cwts., or
Potatoes, 11 cwts., or
Silage (ordinary), 10 cwts., or
Dried Sugar Beet, 3 cwts.

The total water requirement of fattening cattle getting a liberal allowance of potatoes or swedes would appear to be approximately one gallon per cwt. live weight. When the ration does not contain roots it is rather under that figure. The water requirement would seem to fall a little as the "prime" stage is approached.

Note of Acknowledgment.

This opportunity is taken for thanking all those who have assisted in any way in the carrying out of the various feeding trials. In particular, thanks are tendered to Mr Cochrane, the Supervisor of Experiments, and to Dr M'Arthur for analysis of the foods used and of the manure produced.

[Appendix.

APPENDIX.

The following tables show the individual live weights and the live weight increases of the cattle in the different experiments :—

1. Potatoes *versus* Swedes.
2. Swedes *versus* Sugar Beet Pulp.
3. Sugar Beet Pulp *versus* Silage.

Table I.—POTATOES *versus* SWEDES.

Group I.—*Potatoes.*							Group II.—*Swedes.*						
Bullock No.	Live Weight on				Live Weight Increase.		Bullock No.	Live Weight on				Live Weight Increase.	
	13/10/32.		5/1/33.					13/10/32.		5/1/33.			
	cwt.	st.	cwt.	st.	cwt.	st.		cwt.	st.	cwt.	st.	cwt.	st.
1	7	4	8	6	1	2	1	8	1	9	3	1	2
2	9	2	11	0	1	6	2	8	6	9	7	1	1
3	8	6	10	2	1	4	3	8	2	9	5	1	3
4	8	0	9	5	1	5	4	8	4	10	0	1	4
5	7	6	9	0	1	2	5	7	5	9	3	1	6
6	8	6	10	6	2	0	6	9	0	10	2	1	2
7	7	2	8	5	1	3	7	9	0	10	4	1	4
8	8	0	9	4	1	4	8	7	4	8	7	1	3
9	8	1	9	5	1	4	9	8	3	10	1	1	6
10	8	4	10	2	1	6	10	8	2	9	3	1	1
11	9	2	11	1	1	7	11	6	6	8	0	1	2
12	7	2	8	6	1	4	12	8	2	10	0	1	6
	cwt.	lb.	cwt.	lb.	cwt.	lb.		cwt.	lb.	cwt.	lb.	cwt.	lb.
Average .	8	22	9	66	1	64	Average .	8	22	9	69	1	47

TABLE II.—SWEDES *versus* SUGAR BEET PULP.

GROUP I.—*Swedes.*				GROUP II.—*Swedes and Beet Pulp.*				GROUP III.—*Beet Pulp.*			
Bullock No.	Live Weight on		Live Weight Increase.	Bullock No.	Live Weight on		Live Weight Increase.	Bullock No.	Live Weight on		Live Weight Increase.
	27/10/31.	5/1/32.			27/10/31.	5/1/32.			27/10/31.	5/1/32.	
	cwt. st.	cwt. st.	cwt. st.		cwt. st.	cwt. st.	cwt. st.		cwt. st.	cwt. st.	cwt. st.
1	10 2	11 6	1 4	1	10 0	11 6	1 6	1	10 4	12 0	1 4
2	8 5	10 1	1 4	2	8 7	10 3	1 4	2	8 1	9 4	1 3
3	9 5	11 7	2 2	3	9 2	10 5	1 3	3	9 0	10 6	1 6
4	9 0	10 2	1 2	4	9 2	10 5	1 3	4	9 7	11 3	1 4
5	9 3	10 7	1 4	5	8 1	9 6	1 5	5	9 3	10 6	1 3
6	9 2	10 7	1 5	6	10 2	12 0	1 6	6	9 2	10 6	1 4
7	8 0	9 3	1 3	7	8 6	10 3	1 5	7*	10 0	12 4	2 4
8	10 3	12 3	2 0	8	10 0	11 3	1 3	8	8 2	10 1	1 7
	cwt. lb.	cwt. lb.	cwt. lb.		cwt. lb.	cwt. lb.	cwt. lb.		cwt. lb.	cwt. lb.	cwt. lb.
Average	9 35	10 105	1 70	Average	9 35	10 96	1 61	Average	9 33	10 108	1 75

* The increase for Bullock No. 7 in Group III. is abnormal, being 4 lb. daily for the 10-week period. Excluding it, the remaining seven give an average increase of 1 cwt. 61 lb.

TABLE III.—SUGAR BEET PULP *versus* SILAGE.

GROUP I.—*Beet Pulp.*							GROUP II.—*Silage.*						
Expt. Animal No.	Live Weight on				Live Weight Increase.		Expt. Animal No.	Live Weight on				Live Weight Increase.	
	8/3/32.		31/5/32.					8/3/32.		31/5/32.			
BULLOCK :	cwt.	st.	cwt.	st.	cwt.	st.	BULLOCK :	cwt.	st.	cwt.	st.	cwt.	st.
1	7	4	9	5	2	1	1	7	2	8	6	1	4
2	7	3	9	0	1	5	2	8	0	9	7	1	7
3	8	4	10	0	1	4	3	7	3	9	0	1	5
4	6	6	8	7	2	1	4	7	6	9	5	1	7
HEIFER :							HEIFER :						
5	7	6	9	4	1	6	5	7	7	9	2	1	3
6	6	0	7	4	1	4	6	6	0	7	2	1	2
7	7	6	9	2	1	4	7	7	6	9	2	1	4
8	6	1	7	7	1	6	8	6	1	7	4	1	3
9	7	4	9	2	1	6	9	7	2	8	5	1	3
10	6	2	7	7	1	5	10	6	2	8	0	1	6
11	6	6	8	1	1	3	11	6	4	7	6	1	2
12	6	4	8	0	1	4	12	6	6	8	1	1	3
	cwt.	lb.	cwt.	lb.	cwt.	lb.		cwt.	lb.	cwt.	lb.	cwt.	lb.
Average .	7	7	8	83	1	76	Average .	7	8	8	65	1	57
Average increase for 4 Bullocks .					1	94½	Average increase for 4 Bullocks .					1	80
Average increase for 8 Heifers . .					1	66½	Average increase for 8 Heifers . .					1	45½

INSECT AND OTHER ANIMAL PESTS OF 1932.

By R. STEWART MACDOUGALL, M.A., D.Sc., LL.D.,
Consulting Entomologist to the Society.

Warble Fly Investigation.

IN the intensive Warble Fly experimental work of 1930 and of 1931, Derris extract in the form of Polvo had proved so successful that further work with Polvo was almost limited to areas where the treatment had not yet been tried. Even on this reduced scale, work was further limited by staff changes which took place in two of the Agricultural Colleges. Generally, it may be stated that the results indicated a lessening of the number of warbles among cattle treated in previous years; and further proof was afforded of the efficiency of the Polvo treatment. The first dressing of the season, it should be emphasised, is the very important one, and the earlier in March that this dressing is done the better.

At Dormont, Dumfriesshire, the cattle were examined on 21st March with this result—

	Number.	Free.	Warbles.	No. of Warbles.
Dairy Cows . .	10	5	5	16
Store Stirks . .	10	5	5	13
Out-Wintered Galloway Cattle .	22	19	3	11

Examined some weeks later, after treatment with Polvo, all proved free from warble.

Mr A. Broadfoot, B.Sc., County Organiser in connection with the West of Scotland College of Agriculture, very kindly undertook to demonstrate and to test Polvo in Dumbartonshire, and in a new area in West Perthshire. Twenty-one farms in East and West Dumbartonshire were visited, and three in West Perthshire. Mr Broadfoot, received encouragingly by all the farmers, conducted experiments on four Dumbartonshire farms, where 31 cattle were treated for 225 warbles, and on three West Perthshire farms, where 32 cattle were treated for 169 warbles. The highest numbers of warbles per animal on the date of dressing were 14, 15, 20, 22, 27. All the farms chosen were dairy farms. The intention had been to dress three times at intervals during the season. The first dressing proved very successful, and as the few warbles left were caught by the second dressing, a third was not attempted.

The dressing material was Polvo, made up fresh at each farm from the formula—

Polvo Powder	1 lb.
Soft soap	¼ lb.
Water	1 gallon.

The soft soap was dissolved in 1 quart of boiling water, and the solution allowed to cool to blood heat. *The cooling is very important.* The Polvo Powder was then placed in a bucket, and the cooled soap solution poured over it. During a thorough stirring the dressing was gradually brought up to 1 gallon by the addition of cold water.

This Polvo Powder treatment proved very satisfactory. The material was applied by means of a wrung cloth, first dipped into it. At one farm a motor-cycle oil-squirt was tried. The squirt, however, having a very fine nozzle fitted with a needle valve, tended to choke, so that the application of the Polvo was not so successful as with the 'cloth.'

Before application of the dressing, the opening into the cell where the Warble Fly maggot was lying was cleared of dried and crusted material that would have prevented the proper entry of the insecticide.

As was our experience in the 1930 and 1931 experiments, larvæ, which, by the time of re-examination after treatment, had begun to disintegrate, were difficult to remove. As bearing on the question of whether dead larvæ left in the skin may be a cause of harm to the host, Mr Broadfoot observed that, in some cases where the larvæ had been killed, the opening in the skin of the warbled animal was crusted over and an abscess had formed. By the breaking of this crust, and the resulting escape of the 'pus,' the host animal seemed relieved. In relation to weather as a factor in warble prevalence or scarcity, 'warble' proved in 1932 comparatively rare in parts of Dumbartonshire where in other seasons warble infestation had been well known and warbles easy to find. The farmers were inclined to ascribe this to the excessive rains of the previous summer. Mr Young of Dalmoak Farm, Dumbarton, reported that he had not seen a warble on his cows for several years, due, he believes, to the fact that the flanks and udders of his cows were sprayed regularly during the summer with a preparation for keeping off flies, in the endeavour to prevent udder clap.

Mr W. J. Grant in Inverness-shire and Mr D. Mackay in Skye, County Organisers in the North of Scotland College of Agriculture, in their demonstration and experimental work in Skye and Inverness-shire found Polvo satisfactory.

It was a disappointment that we were unable to carry out two other sets of experiments projected for 1932. One of these problems related to the gaining of definite information as to the possible connection between warble presence and the milk yield. The difficulties were numerous: the interference with the normal round of work in the dairy; the necessity to get a herd large enough and with a sufficiently high percentage of warbled animals; the weighing and recording of the result from every cow at each milking; and the fact that many cows would not calve until well into March. Though the experiment could not be arranged, I would like to thank Colonel Carruthers, Principal Paterson, Mr Gillies of Dumfriesshire, and Mr Laird of Ayrshire, for all the trouble they took.

The other problem was to try and obtain information as to the breeding of Warble Flies and their flight capacity. With the House Fly, with Mosquitoes, with the Tsetse Fly, with Bees, a good deal of trustworthy information has been accumulated as to their power and distance of flight. Released individuals of the above insects, first marked for recognition before their release by mutilation—say, of a leg—or by paint or stains of different kinds and colours, were recovered and reported, and the distances from the place of release recorded. But House Flies, Mosquitoes, Bees and—in their own country—Tsetse Flies abound, and are more or less generally known. On the other hand, the Warble Fly in Britain is rarely caught, and the results by rearing from the larva are apt to be discouraging. For the rearing of the flies, and their collection in the open, apart from the difficulties of recovery and record, team work and enthusiastic field work would be necessary, and although a grant was available through the Committee of the Worshipful Company of Leather-sellers, knowledgeable men with leisure for the work were not at hand, in spite of effort to obtain them.

THE COLORADO BEETLE (*Leptinotarsa decemlineata*).

The year 1932 was interesting entomologically, because it marked the introduction of severer measures in relation to several insects, harmful in other countries and non-native in Britain, that might, in the absence of restrictive legislation, gain entry to Britain and be the occasion of trouble and loss. One of these was the Colorado Beetle. Twice in earlier issues of the 'Transactions' of the Society I have told the story of the Colorado Beetle, and exigencies of space prevent the complete retelling. There are reasons, however, for some further reference. There are new and severer legislative enactments against the entry of potatoes from France. There is the difficulty of persuading French growers of vegetable products other than the potato, but which might play a possible rôle in the introduction of the Colorado Beetle, that in forbidding the import of these we are fighting to exclude the insect and not just to prevent French imports; and always in such matters there are threats of retaliation.

There were difficult and troublesome negotiations with Canada, ending with the decision that it is impossible to remove the embargo on the importation of Canadian potatoes on account of the prevalence of the Colorado Beetle in Canada.

The Colorado Beetle, first a comparatively rare beetle of the Western United States, where its food plant was a weed of the potato family, owes its multiplication in numbers and its spread in the New World, and from the New World to Europe, to the agency of man—unintentional, of course, but none the less true.

When the Settlers travelling westward, and still westward, carried the cultivated potato with them, a time came when their potato patches linked up with the wild or weed Solanum. The beetles deserted the weed for the more succulent and now much commoner cultivated potato. A westward migration took place with a slight southerly one (a too southerly temperature is unfavourable for the beetle), and also a northerly movement into Canada.

At last the Atlantic was crossed, the insects being carried in ships, concealed in vegetable material and plant packing. About 1876-77 the insect was discovered in Germany, and a European scare took place. Apart from the International Convention, which followed the dreaded Phylloxera outbreak on the vines of Europe, this appearance of the Colorado Beetle in Europe originated Destructive Insect Pests legislation in Britain (1877).

In 1901 there was another scare in England. The beetle and its grubs were found attacking potato plants on workmen's allotments inside Tilbury Docks. This outbreak was overcome by drastic annihilative measures in the autumn of 1901 and the spring of 1902, before the insects had a chance of spread.

The entry of the Colorado Beetle to France, and its persistence in the Gironde area since 1922, has proved the worst European invasion, and now, from the way in which the beetle has spread in France in spite of the utmost exertions of the French authorities, it looks as if one can almost reckon on its becoming a permanent resident in Europe.

The northward spread in France continues to bring the insect nearer the Channel, and to guard against this and its subsequent appearance in England restrictive regulations have become more stringent. The Regulations (Colorado Beetle Order) in December 1923 required all living plants, potatoes and tomatoes, imported into Britain from French ports, to be accompanied by an official certificate to the effect that they were grown more than 40 kilometres from any place where the Colorado Beetle exists or has been known to exist. By 1930 new conditions had to be made, and by the Colorado Beetle

(Amendment) Order of 1931 the area of protection was increased to 75 kilometres; and because of the continued spread northward in France the Colorado Beetle Order that became operative in March 1932 enacted that "the importation of potatoes grown in any part of France must be entirely prohibited; that nursery stock and living plants could be admitted only if they were officially certified not to have been grown within 200 kilometres[1] of any place where the Colorado Beetle exists or has been known to exist; and that between 15th March and 14th October of any year the admission of raw vegetables, including tomatoes, onions, aubergines and salads, must be subject to the same restrictions."

In February of this year, in the Ottawa House of Commons, the Minister of Agriculture intimated the receipt of a communication (there had been negotiations and expert advice) from Major Walter Elliot, expressing regret that the British Government could not see their way to removing the embargo on the importation of Canadian potatoes — an embargo imposed on account of the prevalence of the Colorado Beetle in Canada.

The purpose of such legislation is the effort to keep out of the country a crop enemy, which once established in Britain —and there is real danger especially for South England—would require to be fought yearly by the farmer in the use of annually recurring protective and remedial measures. We know how to control the insect as a potato pest, *e.g.*, by a stomach poison, but the annual effort with spraying operations could work out to £2 per acre of additional cost in the culture of the potato.

The Colorado Beetle is not difficult to recognise, either as beetle or as grub, as the drawings and the photographs show (see Figs. 2 to 7).

The adult beetle (Figs. 2 and 3) measures about half an inch in length and almost a third of an inch in breadth. The upper surface of the body is strongly convex. The colour of the beetle is yellow; each wing cover has five longitudinal dark stripes (in the young beetles, just developed from the pupal stage, these dark stripes are at first faint and reddish); the region behind the head (the prothorax) shows two elongated dark blotches near the middle and smaller dark or black spots towards each side. The beetles fly well, and are attractive in flight, as their flying wings (hidden and protected under the tough wing-covers when the beetles are at rest) are pink or bright rose-coloured.

The eggs (Figs. 4 and 5) are elongated and yellow in colour, the yellow changing to red-yellow as they get near to hatching.

The larva (Figs. 6 and 7) is a six-legged grub with small black head and biting jaws; the legs are black; the colour of the body varies, according to the stage of the larva, from dull red in the young stage to paler brick-red or orange-red in the later stage; a double row of dark or black spots runs down each side of the body. The body of the larva is soft; the hind or abdominal part is larger than the rest of the body and is rounded above. The full-grown grub measures just over half an inch.

---

[1] Almost 125 miles.

Fig. 2.—*Colorado Beetles.*

Natural size. Photograph of specimens collected by me in France.

Life history.—Typically the winter is passed in the adult stage, the beetles leaving the plant on which they have been feeding and entering the soil below, or taking shelter under groups of tubers that may have been left behind. These beetles reappear—there is, however, always a considerable

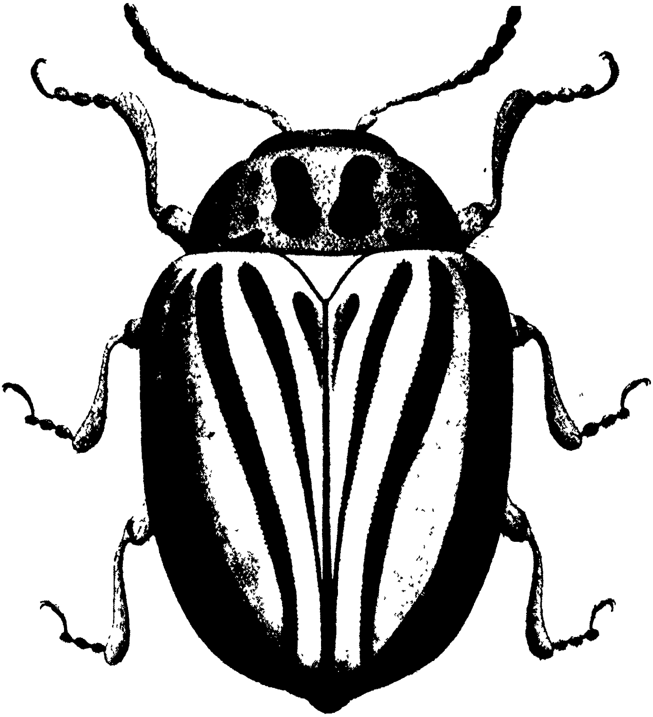


Fig. 3.—*The Colorado Beetle* (Leptinotarsa decemlineata).
Drawn from nature. Enlarged.

Fig. 4.—*Clusters of eggs of Colorado Beetle on potato leaves collected in France.*
Natural size.

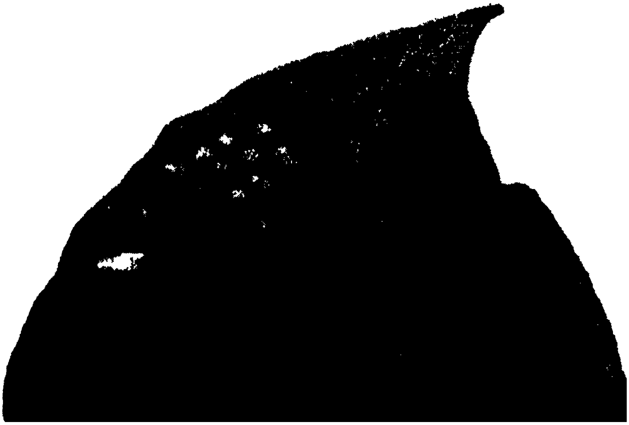


Fig. 5.—*A cluster of eggs of Colorado Beetle on leaf of potato*

Magnified

Fig. 6.—*Larva of Colorado Beetle on leaf of potato*

Magnified

winter mortality—in the next spring, and proceed to feed and mate. The eggs—a large number can be laid by a single female in the course of a possible long life and recopulation—are laid in clusters, chiefly on the undersides of the leaves. The larvæ that hatch feed greedily on leaf and shoot, and when full-fed leave the food plant and enter the soil for pupation. There is a brief prepupal stage, during which the larva rests, previous to the moult which reveals the pupa.

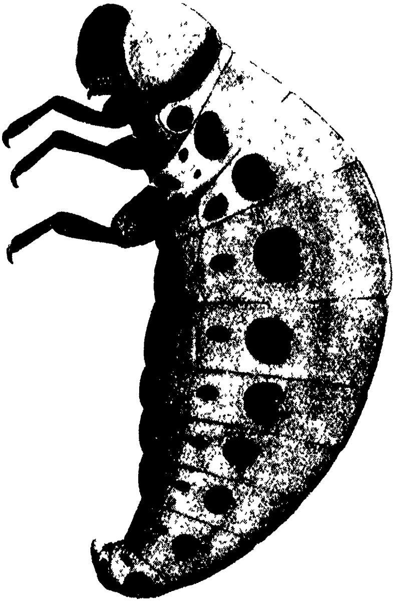


Fig. 7.—*Larva of Colorado Beetle.*

Drawn from nature. Enlarged.

The Colorado Beetle is a major pest of the potato and a minor pest of the tomato. It will feed, however, on some other plants of the potato family—though not very successfully. In cases where the over-wintered beetles have come up from the soil and into the open before potato plants were available for food, they have been found on weed plants other than those of the potato family.

The beetles can be long-lived. Females that lived through the previous summer and then hibernated have been found to reappear after hibernation and renew their egg-laying.

As regards temperatures at which the Colorado Beetle can be active, Mr Gibson,[1] the Canadian Entomologist, gives some figures that have an interest for us in Scotland. It was found that the Colorado Beetles that had been hibernating in the soil became active at a soil temperature of about 71° to 72° F., and that beetles which had come above ground at more favourable temperatures began to burrow below ground again when the temperature fell to 64° or 65° F.

Of other recent restrictive legislation there may be mentioned that against the Cherry Fruit Fly.

THE CHERRY FRUIT FLY (*Rhagoletis cerasi*).

The regulations in force relating to importation of cherries from the Continent have had gradually to be stiffened because of the continued export of maggoty cherries from France, Italy, Germany. The legislation has special relation to the possibility of this Middle and South European, but not British fly, gaining an entry to the Cherry orchards of the south and south-east of England. Apart from this is the risk of people being repelled from buying all cherries because of their finding some of them infested with maggots.

The Cherry Fruit Fly, active on the Continent in summer, lays her eggs under the skin of the developing cherry; the maggot which hatches tunnels in the flesh and completes its growth there. Normally in a cherry orchard the full-grown maggot leaves the fruit and passes into the pupal stage in the soil.

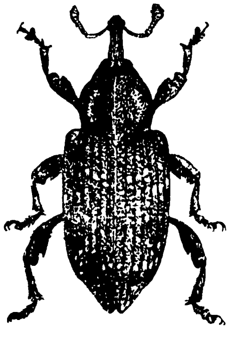


Fig. 8.—*The Large Brown Weevil* (Hylobius abietis).

Magnified. From nature. The natural size of the beetle is on the average ½ of an inch and over.

THE LARGE BROWN WEEVIL (*Hylobius abietis*) (Fig. 8).

Here and there throughout these Reports there will be found notes on this beetle, one of the very worst enemies in British forestry. H. abietis lays its eggs in the stumps and roots of felled conifers, pine chiefly, and here the adults are reared. The damage is done by the adult Weevil, which, in its feeding, gnaws pieces out of the bark, right into the cambium, of young nursery conifers and broad-leaved species up to about seven years of age. Thousands of young plants may be destroyed, and nurseries may require to be replanted. It has also been shown that the Weevil may feed high up in the tree on young branches. Much work has been done in the last 60 or 70 years on the biology of Hylobius and on methods of control. I desire to call attention to two recent papers[1] reviewed in the 'Review of Applied Entomology,' Vol. xxi., Ser. A., Part 1, January 1933. These papers contain interesting and helpful new information as to the flight capacity of the Weevil, and to control measures.

---

[1] 'The Colorado Potato Beetle in Canada,' by Arthur Gibson, R. P. Cobham, H. F. Hudson and J. A. Flock. Dominion of Canada, Department of Agriculture, Bull. No. 52, New Series.

Hylobius abietis is a good flier, as anyone may easily prove if a caught Hylobius be offered opportunity for flight from hand on a sunny day. Butovitsch records flight of over 500 yards and at a height of 150 feet.

That the Large Brown Weevil flies well has been offered as an argument against a sometimes practised method of control—viz., the making of a trench round a newly planted area to prevent the incoming of the adults from their hibernating quarters or from the stumps of felled trees in which the grubs have developed and from which the Weevils issue. It is a fact, however, that such trenches have been found helpful. Great numbers of Hylobius have been trapped in them and then destroyed. Working in North and East Germany, Butovitsch found that normally Hylobius issued from winter quarters in April, and that for a period up to two weeks the beetle did not fly; then flight took place, followed by mass flights, except in unfavourable weather, when Hylobius did not fly at all. Another interesting feature in the life-history of Hylobius is Butovitsch's observation that only about 2 per cent of the Weevils hibernate where they have been bred, the chief winter quarters being stands of forest in the pole stage.

A much practised method of fighting Hylobius is the trapping of the Weevils, the lures being billets, or pieces of fresh bark laid inner surface downwards, and weighted as a protection against wind, or sometimes one makes use of the stumps of felled trees. The Weevils are attracted to these for feeding, by the odour. Much helpful experimental work has been done along these lines by our own Forestry Commission.

The value of trap trenches is also known. Butovitsch recommends the preparation of trap trenches early enough to trap the Weevils before they take to flight. He recommends the digging of these trenches close to the edges of the stands of conifers that surround the area to be protected, thus giving the trenches the advantage of shade, as well as making them reachable before the Weevils take flight. The trap trench should not be more than 18 inches wide, so as to disfavour the taking wing by the insects. The lure for feeding purposes consists of fresh twigs and bark, and these are dusted over with calcium arsenate to poison the feeding Weevils. Also for the purpose of disfavouring flight it is recommended that the trap branches should only be one-third of the depth of the trench.

---

[1] "Neue Wege zur Bekämpfung des grossen braunen Rüsselkäfers," by V. Butovitsch, in 'Forstarchiv.' Hanover, 1931.

"Die Flugvermögen des grossen braunen Rüsselkäfers," by V. Butovitsch, in 'Forstev.' Zbl. No. 13. Berlin, 1932.

Paradichlorobenzene is quoted as a successful dressing for the trap twigs, an alternative to the calcium arsenate. Paradichlorobenzene ($C_6H_4Cl_2$) is a chemical substance which can be bought in the form of white crystals, which in appearance suggest Epsom Salts. The crystals on exposure to the air give off a heavy gas which penetrates through crevices and air-spaces in the soil, and can also invade the tunnels made by caterpillars and other grubs in the roots of trees. It should not be used with young plants or young trees. The gas is non-inflammable.

Early July 'isolation trenches,' round a previously felled area where new broods are being reared, are useful against the newly emerged adults which proceed to wander over the ground in search of winter quarters among neighbouring stands of trees.

THE RASPBERRY BEETLE (*Bylurus tomentosus*).

Now and again I have given notes on this beetle, a destructive enemy to the raspberry, loganberry, blackberry. Here I draw attention to some successful methods of control that have been the result of experiment. A general statement on the life-history of the beetle will render the attempted control methods more intelligible.

The adults are destructive to bud and flower; they feed at the base of the flower where the nectar glands are, and also attack the stamens; the grubs tunnel into the receptacle of the fruit (called plug by practical men) and into the fruit itself. As a result the fruit is spoiled or misshapen.

The beetles issue from the soil in May and June. Eggs are laid in the opening flower-buds, the eggs being attached to the young stamens and pistils. On the blackberry the eggs are laid at a somewhat later date. The eggs hatch in a fortnight, giving rise to six-legged, jawed grubs which grow to a length of $\frac{1}{3}$ inch; the grub has at the hind end two curved spines between which is a small muscular process that aids movement. When full grown the grub passes to the soil and in the surface layers pupates under cover of an earthen cell. The beetles remain so protected till the next May or June.

There has been some success by Lees and Walton at Long Ashton, at East Malling by Steer, and at Isle of Ely by Petherbridge and Thomas, with solutions of Pyrethrum

Powder as a spray, but here I want to focus attention on some results with Derris. Derris is well known to our members from the numerous successful experiments with it as destructive to the larvæ of the Warble Flies. But dusting with Derris Powder and spraying with Soft Soap Solution and Derris are also practised against insects on agricultural and fruit crops. The experimental results of the use of Derris as powder and as spray against the Raspberry Beetle have been recorded by Petherbridge and Thomas,[1] and are most encouraging, confirming and extending the results obtained by Steer at the East Malling Research Station.[2]

Control of the pest on Loganberries.

Formula for Dusting—

A Derris Dust containing 0·2 per cent of rotenone.[3]

The purpose is to kill the beetles before they have laid their eggs. Petherbridge and Thomas consider this the most satisfactory means of control. The first dusting should be made before the flowers open and when the beetles are feeding on the developing leaves on the new shoots. The operator should aim at coating the tips of these shoots. Two applications before the opening of the flowers might be given. Roughly the cost would be £2 per acre. "When the flowers begin to open, the whole of the plant should be dusted thoroughly." Perhaps 3 cwt. of dust per acre would suffice at a cost of £6.

Experiments against the maggots with a Soft Soap and Derris Spray confirmed Steer's results.[2]

Soft soap	10 lb.
Derris (0·2 per cent rotenone)	2 lb.
Water.	100 gallons.

Spray about ten days after full bloom and again about ten days later.

Control of the pest on Raspberries.

Dusting.—No experiment was done by Petherbridge and Thomas, but observation of a badly attacked plantation elsewhere, where dusting was done when the canes were in full bloom, suggested this as a satisfactory means of control.

---

[1] "The Control of the Raspberry Beetle," by F. R. Petherbridge and I. Thomas, School of Agriculture, Cambridge, in 'The Journal of the Ministry of Agriculture,' Vol. xxxix, No. 11, February 1933.

[2] "The Loganberry Beetle," by W. Steer, in the Annual Reports, East Malling Research Station, 1928, 1929, 1930, and 'The Journal of Pomology,' Vol. 10, March 1932.

[3] Derris contains several poisonous principles, of which rotenone is the most important.

Spraying (Soft Soap and Derris formula as above).—A satisfactory control of the pest was obtained by spraying ten days after full bloom, and again ten days later.

A Soft soap and Nicotine spray yielded equally satisfactory results. The formula was :—

Soft soap	5 lb.
Nicotine sulphate . .	10 ounces.
Water.	40 gallons.

About ten years ago an attempt was made to fight the Raspberry Beetle in Saxony, where it was doing much damage, by starving it out. The plants were cut back in autumn right to the ground, so that there would be no flowers in the next spring. In the second year after the cutting back the crop was quite free from the beetle.

As regards this starvation method of control, one should remember two things : *first*, the beetles fly well ; and *second*, the flowers of some other Rosaceous plants are attacked—*e.g.*, apple, hawthorn, wild rose.

ANTS.

Hitherto in my Annual Reports references to Ants have mostly had to do with the troublesome House Ant (Monomorium). Ants, however, can be a cause of trouble out-of-doors, and in response to inquiries a general account is now given. The word Ant is apt to be ambiguous, and we will clear away possible confusion by stating that the ants of this Report have nothing to do with White Ants or Termites which belong to quite a different insect Order and only resemble the true ants, more or less, in their colonial life. Our ants belong to the Order Hymenoptera and that branch of it containing the Social Insects—the Bees, Wasps and Ants. Three easy-to-understand differences between the True Ants and the White Ants may be stated :—

True Ants.	*White Ants.*
Have hard bodies.	Have soft bodies.
Have a waist—*i.e.*, the abdomen or hind body is joined to the thorax or fore body by a stalk.	Have no waist—*i.e.*, the abdomen is broadly joined to the thorax.
Have a complete metamorphosis —viz., adult, egg, larva or grub, pupa.	Have an incomplete metamorphosis—*i.e.*, the insect that hatches from the egg resembles in form the adult, and attains the adult condition after feeding and a series of moults and without a resting or pupal stage.

ANTS (*Family Formicidæ, Order Hymenoptera*).

There was an old belief that Ants had such a love of industry that they only bit or stung idle people. The lazy boy taunted with, "It's the early bird that catches the worm," countered with, "Serve the worm right for getting up so early!" (As a zoological fact it is the late worm that the early bird catches, but that is another story.) And sometimes man, urged to excessive industry by Solomon's "Go to the ant, consider her ways and be wise," is tempted to retort that he prefers the other saying, "Consider the lilies of the field, they toil not." And yet when one looks a little into the marvels of ant life and the colonial and communal life of the ant-nest, where the altruistic instinct is displayed at its highest level, it is no wonder that kings and moralists and philosophers should have been enthusiastic about the ant.[1]

The Ant community is an intricate social organisation where each member is doing work for the benefit of the whole community. But the ant does not require to be taught; its behaviour is instinctive behaviour, and probably in the ant, instinct reaches its highest perfection; the ant has not to be taught to serve the community, but is born with the instinct to do so. Man, on the other hand, represents evolution at its height in the other direction—namely, he has freedom; he learns, and his social organisation is a result of learning and experience. Some of the actions of ants seem beyond the mere automatic, however, and certain authorities argue a low grade of intelligence; that ants are not mere bundles of 'reflexes,' but are something more, as is indicated by what sometimes seems memory and by the emotion or feeling displayed in fits of excitement and anger, and depression and playful pleasure.

For the better understanding of the life of the ant community a few structural details may be given:—

Mouth-Parts.—The mouth-parts are jawed, and there is an important part—a tongue with ridges on it—by which the ant rasps its food and licks up its food; this tongue also plays a great part in the so characteristic habit of the ant to be forever cleaning and licking itself and its companions.

Food.—Ants of temperate countries live on a mixed diet of plant juices, honey and flesh food; they also greedily take the secretions of their own workers.

Stridulating Organ.—Some ants have, on that part of their abdomen which comes after the waist, a file-like sound-organ, against which the sharp hind edge of the joint in front rasps or scrapes. When ants that possess these sound (stridulating) organs find food they become excited, and in their excitement they stridulate and so advise other ants and attract them to the food. Similarly, when a nest is attacked the ants collect to the warning stridulation or rasping.

---

[1] The student should read 'The Social World of the Ants,' by Forel, and Professor W. M. Wheeler's book on 'Ants.' For our own ants the book to read and consult is 'British Ants, their Life-History and Classification,' by H. St J. K. Donnisthorpe.

The Infra-Buccal Pocket.—Inside the ant's mouth and below the pharynx, is a little pocket or cavity into which is received little pellets, resulting from such food as has been rasped off by the tongue, and any material scraped off the ants in their licking and also scraped off by comb-like spines on the front legs (the strigils). The juices are extracted from the pellet and swallowed, and then the pellet is discharged. It will be noticed, then, that what ants swallow is in liquid form.

An interesting feature in ant life may be mentioned here. In America there are ants known as the Parasol Ants, which cultivate mushroom-like fungi in specially prepared and carefully weeded 'gardens.' The ants and their young are nourished on little swollen cabbage-like or kohl-rabi-like clumps that appear on the fungus. Now when a young virgin queen of the Parasol Ants is going to leave the nest on her nuptial flight, and then to act as foundress of a new colony, she takes a meal of fungus and packs her infra-buccal pouch or pocket with it; into the pouch also goes any dirt scraped off her body. The young queen carries away this pellet with her, and having excavated elsewhere in the soil a little chamber for herself, she discharges the pellet from her mouth. The fungus begins to grow: the queen tends this new garden, manuring it and weeding it. Then she lays eggs from which grubs hatch, and these are reared on the fungus to the adult or worker stage. These workers, reared by the unaided queen, make an exit to the open, and proceed to collect leaves which are carried home and cut up into small pieces to serve as the soil in which the fungus will be cultivated.

Antennæ.—The antennæ, two in number, one projecting from each side of the head, are bent or elbowed and have a varying number of joints, in different species. The antennæ are very important sense organs; the senses of touch and smell especially are resident in the antennæ. Ants recognise one another by their antennæ and communicate with one another by strokes or taps of the antennæ; the kinds of antennal-tap vary and constitute a sort of language. The antennæ have been called 'touch-noses'; if removed the ant cannot find its food, and loses its way and fails to distinguish friend from foe.

Other Senses.—Ants have eyes (some ants are blind), have a sense of hearing—*i.e.*, are able to appreciate vibrations that reach them from the soil—and also have a sense of taste; they detect and refuse certain poisons. Offered honey may prove a temptation to these terribly industrious creatures to neglect their work.

The Crop.—This is the swollen hind end of the gullet and acts as a reservoir in which liquid food can be kept and drawn upon to feed the larvæ, or can be regurgitated to any hungry ants in the nest or colony, for a hungry ant never solicits food in vain from a worker that has had a good meal.

The Sting and Poison Glands.—The sting in an ant—as also in bees and wasps—is a modified part of the egg-laying apparatus, and, therefore, no male has a sting. All species of ant do not have stings, but where the species has no sting, the queen or female, and the workers or imperfect females, have poison glands. In absence of a sting the poison is squirted over an enemy, and it may be applied to a bite. If a sting be present the poison is, of course, introduced directly. The sting of an ant has no backwardly directed barbs like those on the darts of a bee's sting, and, therefore, the sting can be thrust into the wound and withdrawn without harm to the ant.

The Ant Community.—The community consists of males, queens, and a sterile worker caste; the workers are females without the power of multiplication (workers occasionally lay eggs, and these though unfertilised may hatch into larvæ that develop into males, more rarely into workers). Each of these three castes in a nest may show considerable difference in appearance, and this polymorphism, as it is called, is most familiar among the workers, it being not uncommon with some kinds of ants to find at least three sorts of workers, majors, minors and soldiers, each with their own task. For example, with the leaf-cutting ants, which in North and South America cultivate fungus-gardens, there are very minute workers—little nippers—which never leave the nest, but do all the necessary weeding and planting; larger workers, which go out in companies and carry back a load of fresh-cut leaves for the soil of their fungus-garden; and still larger workers with great jaws—the soldiers—that protect the colony.

In the case of ants we do not find elaborate hives or nests composed of cells, as in the social bees and wasps; but an ant's nest consists of a series of hollowed-out chambers with communicating tunnels or passages. The nests may be underground; or under stones; or in rotten stumps of trees; underneath bark; or in grass-covered hillocks; or there may be conspicuous mounds of vegetable matter—leaves, needles, pieces of twig—or the nest may be indoors in houses. In some tropical species the nest is a paper-like structure, while again—*e.g.*, in the nomadic hunting warrior species—there is no permanent nest or home. The ant community may be a single family, or several families of the same species numbering many thousands of individuals, living together in an extensive nest. Habit of life and technique vary greatly:

hunters, harvesters, biscuit-makers, gardeners, cow-keepers, slave-makers, parasites. Very extraordinary, too, is the story of the abundant animal fauna found in ants' nests: pets and guests and scavengers and burglars and parasites; beetles and green-flies and scale insects and caterpillars and slaters and mites.

Metamorphosis and the Starting of a New Colony.—The queen lays fertilised eggs that result in females and workers; and unfertilised eggs from which the males are developed. The eggs are collected and kept together and regularly licked. From the egg hatches a legless, soft-bodied grub, yellowish in colour; its hind end is thicker and more swollen than the head end; the mouth-parts are poorly developed and only the mandibles are distinctly horny. These larvæ are fed by workers, partly on liquid food disgorged by the worker into the mouth of the grub and partly also on pieces of flesh (insect) or vegetable matter placed beside them. There is an interesting interchange, for after the grub has been fed it offers to the worker a drop of sweet secretion greedily taken by the worker. The workers not only feed the larvæ but clean them and protect them, and change them from one place in the nest to another, according to changes and requirements in moisture and temperature.

The full-fed larva pupates in the nest; the pupa is naked in some species, and in others surrounded by a cocoon. The workers take care of the pupæ and the cocoons, changing their position at intervals and seizing and carrying them to a position of safety should a nest be disturbed. The workers' solicitude does not end here, for when the adult ants are ready to issue after the pupal stage, workers aid them in escape from the cocoon and give attention to these young callow ants. While the nursing and house-keeping workers are engaged in the nest, other workers are out in the open as foragers, bringing home food for the colony.

Ants have a passion for cleanliness, and as an ant cannot conveniently reach every part of its body with its licking tongue, ant-toilet becomes a kind of sociable affair—one ant helping to clean another. Tired ants (and even an ant gets tired working and needs a rest) yield themselves, with signs of willingness and pleasure, to a licking (with the tongue) and to cleaning and combing.

The Founding of a New Colony.—At certain times (summer to autumn with British species) a nuptial flight takes place. Great numbers of winged males and winged females prepare to issue from the nest into the open; there is a distinct restlessness in the colony, and the workers may have to restrain the males and females, impatient to escape. The suitable time is conditioned by meteorological conditions; in certain weather conditions the males and females pour out at the same time, as if by signal, not only from one nest but from nests over a wide area; this cloud of males and females in the air at the same time from different nests is an insurance in favour of cross fertilisation, the males and females of the species from one colony mingling with those of the same species from different nests in the neighbourhood. Typically, mating takes place in the air. Fluttering to the ground the male, having accomplished his mission, as a rule soon dies, often indeed falling a prey to a predaceous enemy, while each fertilised female is capable of becoming the foundress and queen of a new colony.

I recall such a swarm near the sea at Crail on 22nd September 1920. About 3 o'clock in the afternoon, in fine weather, great numbers of winged males and females began to issue from subterranean nests, while considerable numbers of excited workers ran about on the ground. Walking along for a quarter of a mile one observed that the nuptial flight had taken place from numerous nests at intervals over this distance. A gentle wind wafted the cloud of flying ants away from the shore-line where the nests were, towards higher ground. Fifty yards from the nests multitudes of the females were coming to rest. Soon seagulls were flying about devouring the ants on the wing, and starlings, rock-pipits and grey wagtails were enjoying a feast. In one and a half hours the flight was over. The next evening, about 5 o'clock, in very hot weather and in full sunshine, a flight was repeated. I have notes of similar flights in the South of England in August 1926, when " a black stream of ants entered the open window of a drawing-room and covered in a few minutes sofas, curtains, armchairs," on which they proceeded to throw off their wings ; and again of lawn-tennis being stopped, and of dejected golfers forced to return to the club-house with ants crawling inside their clothing, while the fairway was covered, and the sand-boxes on the tees hidden, by crowds of ants.

Ewers[1] says about this wedding of the ants that the workers appear to be bidding the sexual individuals farewell, patting them with their antennæ, fussing around and offering them food. He then compares the marriage-flight of the ants to what took place several thousand years ago in the Italian cities—among the Sabines, Latins, Samnites—before the founding of Rome. " If the city had become too crowded through over-population, the young folks—youths and maidens—had to leave. They were sanctified to the gods, crowned with wreaths, laden with gifts and bade good-bye. In the mountains the young people celebrated their bridals and founded a daughter-city and a new people—or sometimes they perished."

---

[1] 'The Ant People,' by Hanns Heinz Ewers, translated by C. H. Levy.

A comparatively small number of the newly fertilised young queens succeed in establishing a new colony. The procedure is rather a wonderful story. A queen on return to earth proceeds to rid herself of her wings—wings would be an incumbrance in underground passages—and creeps into a natural cavity, or makes a cavity, and shuts herself in. Then she lays a number of eggs and takes care of them. The eggs hatch into helpless larvæ, and the queen or mother feeds and tends them. In due course the larvæ pupate, and the queen looks after the pupæ and later helps the adult ants out of their cocoons (if the species be a cocoon-making one). How does the queen obtain nourishment to develop her eggs and to feed the larvæ? Partly at the expense of her reserve of 'fatty-body' and partly by using up her own tissues; the large wing-muscles (the wings having been rubbed and thrown off) are transformed into nutritive matter which reaches and is distributed by the blood.

The ants reared by the queen in this way are all workers; they make their way to the surface for forage, and so relieve the queen as to enable her to give herself up to egg-laying. A queen may live for twelve to sixteen years and all this time be able to lay fertilised eggs from the great store of sperms received at her one and only mating.

While the foregoing is the general way, it sometimes happens that the new queen does not found a separate nest but is accepted into another nest or may join with other new queens to form a colony.

How Ants may be Troublesome.

One of our members in the south-west of England has come, like others, to look upon the ants in his garden and greenhouses as pests, because of their spoiling the " fruits of red and black currants, and injuring half-ripe plums " ; they also ate holes in French bean-pods left for seed. Further, the ants encouraged aphides. Ants sent with the complaint proved to be the Black Ant (*Acanthomyops* or *Donisthorpea*[1] *niger*), sometimes but ambiguously called the Garden Ant, though common enough in many other situations besides gardens. *A.* or *D. niger* is an industrious and courageous species found all over England, Scotland and Ireland. Its nest may be underground or in grass-covered hillocks or under stones or in old stumps, and there may be more or less regular—according to the nature of the place of the colony—storied galleries and chambers. In addition to the sap of fruits, this ant eats insects, collects seeds, takes honey from flowers, and visits aphides and scale insects for honey-dew; it also protects aphides in its nests, building delicate chambers round them to keep them from straying, and 'milks' them regularly for honey-dew.

---

[1] The genus *Donisthorpea* is named after Mr H. St J. K. Donnisthorpe, whose book on British Ants, the result of years of study in the field and experimentally, is indispensable to any serious student of ants.

Aphides and scale insects puncture plant tissue with their mouth-parts and suck up quantities of sugary sap; a considerable proportion of this is excreted by the anus as sweet honey-dew. Ants are fond of this, which is voided in droplets by the green-flies and scale insects in response to a stroking and a caressing of the insect by the ant's antennæ. Such relationships may have distinct economic importance—*e.g.*, a number of years ago coffee-growing in Madeira was ruined by the attack of a scale insect which was protected by a small ant. Again, when I was studying a troublesome scale insect on bananas in the Canaries, the plants were really being patrolled by the Argentine Ant (not itself an enemy of the banana plant, although in other ways one of the worst of pests); these ants were taking care of the scale insect, and keeping at bay insect parasites of the scale insect. The problem was how first to get rid of the ants. To take another example. The relation in the United States between the Corn Root Aphis—a severe enemy of Indian Corn — and an American Ant is so intimate that the Aphis has come to be quite dependent on the ant, which takes care of the aphid eggs during winter, and when spring comes and these eggs hatch, carries the young aphids through the tortuous ant-galleries and places them on the roots of their food plant. The control measure here, then, is to get rid of the ant, although to the corn itself the ant is harmless.

D. niger has also been recorded as visiting and receiving refreshment from the caterpillar of one of the Blue Butterflies (*Lycœna bellargus*). Some Blue Butterfly caterpillars are flesh-eaters during a part of their life. Frohawk and Chapman and Purefoy have all made contributions to our knowledge of the habits of these caterpillars, and Purefoy's research on the caterpillar of the Large Blue Butterfly (not found in Scotland but in the South-West of England) reveals an astonishing partnership between the caterpillars of this species and a Myrmica Ant. The Large Blue Butterfly lays her eggs in summer on the flowers of wild thyme. The caterpillars on hatching feed on the flower parts but make no great growth. A time comes in late summer when one of these caterpillars becomes an object of interest to a passing Myrmica. The ant caresses the caterpillar by strokes with the antennæ, and the caterpillar responds by exuding from a gland near the end of its body a droplet of clear fluid. Then the caterpillar gives a signal that it desires to be carried, the signal being the inflation of the segments of its fore-body; the ant so warned gets astride the caterpillar, seizes its skin by the jaws and carries the caterpillar to the Myrmica underground nest. Arrived here, the caterpillar is placed among the ant larvæ and feeds on the small ones. In late autumn and during winter the caterpillar goes to sleep with the ants, to wake up again in spring and renew its feeding upon ant larvæ, attaining a size three times larger than when carried into the nest. The full-grown caterpillar then pupates in the ant's nest, and after pupation the Large Blue Butterfly makes its way through the ant galleries out into the open air to fly about in the sunshine, and, having found a mate, to begin a new life-cycle.

Besides damage to the currants and plums of my correspondent, my notes record, also from the south, damage to buds, and to the petals of roses and other garden flowers. Ant nests at the roots of cultivated plants can also be a cause of trouble. Ant-mounds on fields are a subject of complaint, as also the rapidity with which, though the mounds be removed or levelling done, the hillocks are formed again. In another complaint ant-heaps among grass had proved troublesome when the hay was cut, earth and ants being gathered with the hay. Lawns also are spoiled by the collections of thrown-up soil.

Control.

This is not at all an easy matter. Ants are tenacious, and one has to be persistent. Unless the queen—the egg-layer—is killed, there is always the chance, in spite of the destruction of crowds of workers, of the colony becoming populous again. To reach and destroy the nest—the sure way of control—is often difficult and even impossible.

Repellents.—Crude naphthalene, while it may not kill the ants, can act as a deterrent and drive them away. Sawdust soaked in paraffin, scattered over the places where the ants are running about, also acts as a deterrent.

Fumigants.—*Bisulphide of Carbon.* This is a heavy liquid which vaporises rapidly on exposure to air; the vapour is two and a half times heavier than air and sinks downwards. Where a nest is evident, or an underground one has been located, a blunt stick or a rod should be thrust into the soil between one and two feet deep according to the conditions. Two ounces of bisulphide of carbon should be poured into the opening, which should then be plugged up with soil. In the case of large nests, more than one boring should be made. Where the ants are spread over a considerable surface and the nest itself has not been located, then holes should be made in the infested soil at intervals of a yard. The bisulphide of carbon vapour sinks downwards along the ant galleries, and the ants are destroyed. The work should be done in the evening; the soil should be warm and neither too wet nor too dry.

If the bisulphide of carbon is being used in a greenhouse, any holes made should be two feet from the roots of the plant. The liquid damages any part of the plant it touches.

Drawbacks and Warning.—While bisulphide of carbon is efficient, the treatment is expensive on any extensive scale; but for a nest it is very satisfactory. It should be noted that bisulphide of carbon is most inflammable and highly explosive; no light should be brought near and the operator should not be smoking. The fumes are poisonous, and the worker must not remain in an enclosed place with the vapour or gas.

Carbon-tetrachloride may be used instead of carbon-bisulphide; it has the advantage of not being inflammable, but it does not kill so well and has to be used in double the quantity.

Calcium Cyanide.—This substance, which gives off hydrocyanic acid gas fumes, has come into use of late years as a fumigant, and is sometimes mentioned as of service against ants. In the open it gives off the gas too rapidly. The vapour, owing to its lightness, ascends. If the calcium cyanide dust or powder could be blown into the nest and underground passages of the ants it would be very effective. In the tropics calcium cyanide has been used successfully as a dust in nests, and also in dusting ants on plants; the dusted plants must be dry. Calcium cyanide is a very dangerous poison, and so is the gas which it gives off. While outdoor applications may be safe, greenhouses or rooms must be well ventilated before re-entry, and the work done by a skilled worker.

Poison-Baits.—The poisonous material is some form of arsenic mixed with honey or a sweet syrup. The foraging ants take the bait greedily, and having carried it to the nest, the workers there, and the queen and the grubs which are fed by the foragers, are poisoned and the foragers themselves succumb.

Everybody knows the danger of Arsenic. Dangerous poisonous baits, scattered widespread, may bring one up against the law. There can, too—with carelessness—be risk to domesticated animals.

(1) *Paris Green Bait.*—The bait used against the leather-jacket or larva of the Daddy Long-legs is serviceable against ants: 1 lb. of Paris Green and 30 lb. bran moistened with 2 gallons of water. This would serve for an acre of ground.

Paris Green is a deadly poison to human beings and all animals.

(2) *Arsenic* as Fowler's Solution.—A correspondent in the 'Field' wrote to say that he had been successful in clearing ants out of a vinery and a hothouse by using a teaspoonful of Fowler's Solution (liquor of arsenic) sweetened with sugar. Little tins were used to hold the bait, and were placed here

and there. A flower-pot was inverted over each, the edge being tilted up with a match or pebble, allowing the ants to enter but preventing accidents to dogs and cats.

(3) A poison-bait used in the United States with success against the dreaded Argentine Ant and other ants has the following formula: Boil slowly for half an hour—

Granulated sugar	1¼ lb.
Water	1¼ pint.
Tartaric acid (crystallised)	1 gram.
Benzoate of soda	1 gram.

Then dissolve ⅛ ounce of sodium arsenite in a fluid ounce of hot water.

On the cooling of the above solutions add the second to the first and stir well, and a syrup will be formed. Then add ⅔ lb. of strained honey, and mix thoroughly.

This bait is placed in tins here and there amid the runs of the ants. The tins are fitted with badly-fitting lids to leave openings by which the ants can reach the syrup, or the tins are perforated. A piece of sponge in the bottom, dipping above the syrup, is an advantage.

Trapping.—Mr Harold Bastin has suggested the following for lawns: Place inverted flower-pots over any holes in the ground being used by ants as exit and entrance-places. In some weeks the ants will have transferred their galleries and chambers from underground to the flower-pot. When this has been observed, by looking through the hole in the flower-pot, a stiff piece of pasteboard is slipped under the mouth of the flower-pot, and the ants in all stages of development can be drowned.

The Grey Squirrel, the Musk Rat, the Nutria or Coypu.

In relation to the Balance of Nature, Sir Arthur Thomson wrote: "Operating on Nature is like playing chess—one has to try and see the distant consequences of a move." It is from this viewpoint that I desire to give some notes on three alien mammals that have been introduced into Britain—the Grey Squirrel, the Musk Rat, the Coypu.

These three Mammals belong to the great Order of Rodents, a widespread Order, for the most part of terrestrial animals, although a number are arboreal in habit. The Rodents or Gnawers are characterised by chisel-like front teeth or incisors; the absence of canine teeth; and by the distinct space without teeth between the incisors and the cheek teeth or molars. The incisor teeth, two in the upper jaw and two in the lower (except in the hare and rabbit, where there is an extra pair in the upper jaw behind the first pair), are interesting, because they are rootless and grow throughout the animal's life from persistent pulps, being added to from behind as they get worn down by use in front. The apex of an incisor tooth is chisel-like; the softer dentine of the hind part of the tooth wears before the harder enamel does, and so a cutting or gnawing edge of hard enamel is provided. Examples of rodents, in addition to those already named, are rats, mice, voles, the dormouse, lemming, hamster, beaver, guinea-pig, porcupine, chinchilla.

THE BRITISH RED SQUIRREL.

This is one of the dozen or so of races of the European *Sciurus vulgaris.* Its history in Britain is interesting. Once common in ancient times when there were great conifer forests over Scotland, the Red Squirrel, towards the middle of the eighteenth century, became so rare that it was re-introduced, when it again became common in some parts of Scotland. Now in different years or cycles of years there are considerable fluctuations in numbers. The low numbers of the Red Squirrel in some parts of the country, and its complete disappearance in others, has been ascribed, without real proof, to its persecution by the larger Grey Squirrel; though competition with the Grey Squirrel, which is more adaptable to its environment and has a greater and more varied range of food, may have become a factor in the reduction of the Red Squirrel's numbers in some areas. Anti-squirrel clubs, practising the shooting down of the Red Squirrel because of its destructive work in conifer woods, have done something to keep the numbers down, but probably periodic epidemic disease has done more.

In old days the south of Scotland forest clearances for pasture and cultivation generally, resulted in the disappearance of the Red Squirrel. Again in the south-west and west of Scotland the great iron-smelting industry in the sixteenth, seventeenth and eighteenth centuries resulted in the felling and using-up of forests to provide timber for the furnaces, and this had a real connection with the disappearance of the squirrel.[1] We will now find a definite relation between the work of the Forestry Commission in its planting of new conifer woods, and the possible numbers in future of the Red Squirrel.

THE GREY SQUIRREL (*Sciurus carolinensis*, var. *leucotus*) (Fig. 9)

There are a dozen different species of Grey Squirrel in America. The Grey Squirrel introduced to Britain is the variety named above and found in the East and Central

---

[1] For a masterly account of how civilisation and cultivation and social habit may affect the fauna of a country, the student should read 'The Influence of Man on Animal Life in Scotland,' by Professor James Ritchie of Aberdeen.

United States and South-East Canada. The completest account of this American Grey Squirrel in Britain is given by Mr A. D. Middleton, of the Oxford School of Zoology, in his book, 'The Grey Squirrel,' published by Sidgwick & Jackson.[1]

Correspondence in the public press, the instructions issued by the London County Council at the end of 1931 for the extermination of all Grey Squirrels in the parks and open spaces under its control, the National Anti-Grey Squirrel campaign launched under the auspices of 'The Field,' and the efforts of local Societies, all testify to the unwisdom of the bringing of this alien mammal to Britain and its encouragement. Actually since 1889 there have been over thirty introductions of the Grey Squirrel to Britain. The introduction was for æsthetic pleasure. No one denies the charm and the active grace of the Grey Squirrel in the open, and the Economic Zoologist can still preach that "man does not live by bread alone" without being able to forget his duty to his neighbour by shutting his eyes to the plague of Grey Squirrels. To those

Fig. 9.—*The Grey Squirrel.*

By the courtesy of Mr A. D. MIDDLETON.

---

[1] This is a very happy and easy to read little book, which describes the food and habits of the Grey Squirrel, its relation to our Red Squirrel and the economic aspects, including control.

The student should follow up Mr Middleton's ecological work on Rodents, and his studies on Cycles in Rodents and their possible relation to disease, in the 'Journal of Ecology.'

who see or know only one aspect of the matter, and think they have settled the matter by quoting—

> " Even 'the least of things' . . . had just
> as clear a right
> To its appointed portion of delight
> As kings or queens,"

our answer is, let these alien squirrels exercise their right at home in the United States, where they fill a niche of their own in harmonious adaptation to their environment.

It may be added that this Grey Squirrel, introduced into South Africa by Cecil Rhodes, has so multiplied and spread at the Cape, as to have become a garden and orchard pest.

The Grey Squirrel has multiplied and spread, and will continue to spread over the country, favoured incidentally by the planting of hard-wood forests. It is found from the south-east of England to the centre and on to North Wales and Cheshire, in patches in the south of England, in Yorkshire and Durham. In Scotland it has spread over Dumbartonshire (from set-free specimens) to Stirlingshire ; it is found in Fife (specimens were set at liberty in Pittencrieff Glen, Dunfermline) ; and has been recorded from Midlothian, East Lothian, Angus, Perthshire.

At some distance the Grey Squirrel looks silver-grey, although, as Middleton states, a close examination shows no actual grey hairs, but hairs that have a black, a light-brown and a white zone (the tip), and other hairs that are russet-brown. The animal, distinctly larger than our Red Squirrel, measures 20 to 21 inches in length, including a bushy tail of 9 inches. Ear-tufts, which are a feature of our own squirrel, are absent in the Grey Squirrel. The eyes are black and prominent. The 4 fingers (front toes) and the 5 toes are provided with long black claws.

Becoming mature in the year following its birth, the Grey Squirrel may have two litters in a year. Middleton, from his experience, suggests 6 as the average number of young per year (the number in a single litter varies from 3 to 5). The young are born in a nest in a hollow stem, or in an exposed nest or drey, often high up ; the nest is built of twigs that retain their dead leaves, and is lined with leaves, grass, moss, bark. The new-born young are blind and naked. The family scatters as soon as the young squirrels are able to forage for themselves. Smaller nests or dreys are not uncommon in summer, for use as shelter or resting-places. The large nests are used as shelter-places in winter. The Grey Squirrel, unlike the dormouse and the hedgehog, does not go to sleep for the winter.

With reference to the charge that the Grey Squirrel bullies and persecutes the Red Squirrel, a writer, in 'The Field' (20th February 1932), writing from Washington, United

States, tells how the American Red Squirrel, though smaller than the Grey, chases the Grey away, and is the victor if a fight takes place. Mr Middleton remarks on the great difference in habit here, where the Grey Squirrel is master. The omnivorous habits of the American Grey Squirrel in Britain account partly for the success of the alien as well as make it more a general pest than the Red Squirrel. A list of the bill of fare as given by Middleton in his book, and culled also from a large series of complaining letters, shows that the Grey Squirrel is not only a forest enemy but an enemy of the farmer, the fruit grower, the gardener. While in relation to the forester our British Red Squirrel is an enemy chiefly of conifers, the Grey Squirrel, while not altogether passing conifers by, is an enemy more of deciduous or broad-leaved species, the bark of whose stems is stripped off for the coveted cambium and sappy inner bark and bast (Fig. 10); young leafy shoots are also eaten, and buds; also immature cones and later the seed of riper

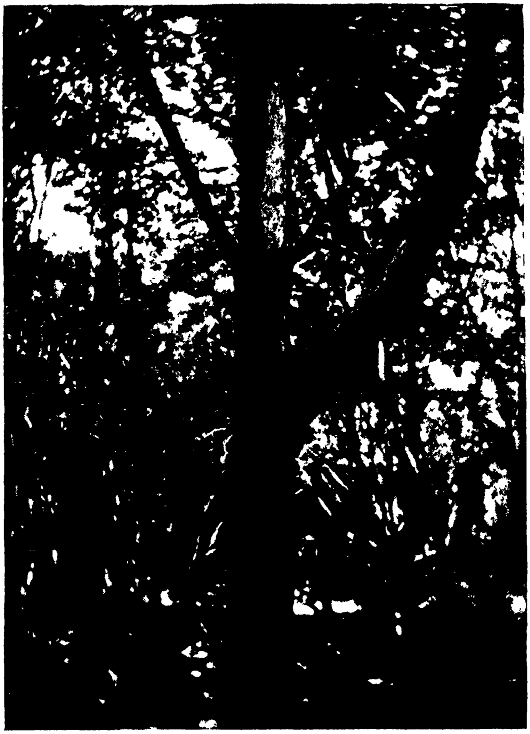


Fig. 10.—*Bark of stem and branch stripped by Grey Squirrel.*

By the courtesy of Mr A. D. MIDDLETON.

cones, and quantities of the fruit and seed of many deciduous trees, both dry fruits and succulent fruits; the gardener suffers by attack on corms and bulbs and peas and beans; and the farmer not only has his peas and beans raided, but ears of wheat and oats are also taken—in the fields after cutting and in the stacks before threshing—because the Grey Squirrel spends more time on the ground than the Red Squirrel. The eggs and the young of ground game-birds are taken as food, and there can be considerable harrying of the nests, and of the young, of birds that nest in trees. The practised methods of control are shooting and trapping. Middleton, in his book on the Grey Squirrel, gives information on both of these measures. In the United States and at home here, some have pointed out that the American Squirrel is very good eating, stewed or roasted or as squirrel pie, and an American has naïvely suggested that "if only put on the bill of fare the squirrel problem would be solved."

Fig. 11.—*Musk Rats.*

By the courtesy of the Director and with the permission of the Leicester Museum.

THE MUSK RAT OR MUSQUASH (*Fiber zibethicus or Ondatra zibethica*) (Fig. 11).

In the 'Transactions' for 1932 a short account was given of the Musk Rat, and attention is drawn again to this rodent in view of the great development in Scotland and England of a national campaign, the final object of which is the extirpation of the animal in the open.

The Musk Rat, so named from the musk-like odour given off by glands in its hind region, belongs to the great rat, mouse and vole section of rodents. Native in North America, where in stretches of pond and marshland it finds favourable conditions for its life, the Musk Rat or Musquash is encouraged for the sake of its pelt, some millions of skins a year passing through the fur markets. The prices obtained, encouraged interested observers in Britain, and almost six years ago there were importations, the purpose being to breed the Musk Rat in confinement for sale to other breeders and, on a larger scale, for the sake of its skin or pelt. Unfortunately, in spite of care with wire and other fences, some of the animals escaped, and they have so multiplied and are doing so much damage that the aid of Parliament has been invoked, and a Destructive Imported Animals Act, 1932, has been passed, under the provisions of which it is "unlawful either to land or to keep Musk Rats in Great Britain except under licence" from the Ministry of Agriculture or the Department of Agriculture for Scotland. One does not wish to be censorious, and in the nature of things Government Departments have to move slowly and circumspectly, but it is a pity that more active steps to check the Musk Rat did not follow the warning of the Linnæan Society in November 1929. Probably but for the Great War we would have had greater warning by hearing more of the disastrous multiplication and spread of the Musk Rat in Central Europe from a few introduced specimens.[1] "In the autumn of 1905, Prince Colloredo-Mannsfield imported two males and three females alive from Alaska, and turned them loose on his estate at Dobrisch, about 25 miles south-west of Prague, Bohemia. They established themselves on two small natural ponds, and thrived and bred freely. No other introduction is known to have taken place in Central Europe. The descendants of the original five increased in number, and proceeded to colonise the surrounding country at an amazing rate. Greatly aided by the river systems, and particularly those of the Danube and Elbe, the Musk Rats, in the face of later relentless persecution by most of the Governments and Local Authorities concerned, have spread over most of that part of Central Europe which lies between 47° and 52° North latitude, and between 10° and 18° East longitude. By 1926 the Musk Rat population within this area was estimated by competent officers to be about 100,000,000." Truly "the flood comes with a crack in the dyke." Now in different States of Germany illustrated posters are displayed, giving warnings as to the "Musk Rat Danger," with short descriptions of the animal and how its presence and work can be recognised; encouragement is given to shoot and trap, and rewards are offered for information of new localities and for captured animals.

---

[1] "The Musk Rat Menace," by Martin A. C. Hinton, Deputy-Keeper, Department of Zoology, in the 'Natural History Magazine.' Vol. iii., No. 22. British Museum (Natural History), South Kensington, London. April 1932.

To be successful in campaigning against the Musk Rat a training in methods of control is necessary, and for this purpose, following a conference in Central Europe, experts from Germany have been invited to give, under the auspices of the Ministry of Agriculture and the Department of Agriculture for Scotland, demonstrations in the worst infested districts of the west of England and central Scotland.[1] It is the duty of all of us to further and to help in every way possible the efforts of the Ministry of Agriculture and our own Department of Agriculture for Scotland. The country is faced with an ecological problem only soluble if everyone that can, helps. An example of the ramifications of the problem is found in the request of the Ministry of Agriculture to the Thames Conservancy Board to make a by-law by which persons that have control of water-courses in Gloucestershire and Oxfordshire should be compelled to cut the Canadian Pond Weed and remove it from the water as a measure of protection against the Musk Rat. Experience of the Musk Rat in Shropshire, one of the largest and worst affected areas in the country —comparable to the badly infested Scottish area that has Carsebreck as a centre—had shown that the removal of this (and other water weeds) hindered the spread of the creature by depriving it of a favourite food. Well, this alone is no easy task, calling for money and labour. Canadian Pond Weed itself is an introduced alien water-plant that has clogged many a pond and stream. For a number of years it spoiled the Lochleven angling by giving shelter to the voracious pike. How Canadian Pond Weed gained entry to Britain nobody knows with certainty. Many years ago it was sent to Professor Babington of Cambridge as a new plant, and the Professor named it, and to this day one of the common names of the plant is "Babington's Curse." Canadian Pond Weed, like some other aquatics, has great power of vegetative multiplication, and pieces broken away from the plant and allowed to remain in the water can develop into further growths.

The Musk Rat suggests, at a quick look, a huge Water Rat. It is much larger than our Water Rat or Water Vole, and better fitted for an aquatic environment. It measures 10 to 12 inches in length without the tail, which is 9 to 10 inches long.

---

[1] While this article is passing through the Press such demonstrations have been given (February and March 1933), and have attracted great notice in the Press.

The tail, used as a rudder, is flattened, not from above downwards like that of the Beaver (the Beaver is represented in Britain only by fossil remains), but from side to side, and runs out to a point; the tail is scaly, and has only a few thinly scattered hairs. The hind feet are large and webbed, have a row of stiff hairs at the edge, and are the chief swimming organs. The legs are short, so that when the animal walks it touches the ground. There are two litters in a year; the number in a litter varies from 5 upwards, according as the female is a young one, or a weakly female, or a strong one. The length of the gestation period with a vigorous female is a month. The young are born blind, naked, and helpless. They are weaned in 3 weeks; and can breed at an age of 6 months. The young forms may migrate. One of the difficulties in fighting the Musk Rat is its power of spreading. Dr Pustet, one of the experts invited to England and Scotland, ringed some specimens, and some were recovered at the end of just over a fortnight, in burrows nearly 30 miles up-stream from the place of liberation.[1]

The Musk Rat is shy and nocturnal. A vegetarian in diet, the normal food is the wild aquatic flora of their environment, but when this fails, garden produce is raided, turnips, carrots, potatoes, Indian corn. There are records, too, of a diet on fish in hatcheries.

The natural habit of the Musk Rat of burrowing into banks of ponds, canals, river courses, embankments, makes it a great pest in places away from wide open marshland. Great damage has resulted from the undermining of embankments, followed by subsidences, and the crumbling of loch and river banks.

Unless cornered the Musk Rat does not actively take the offensive. Caught or cornered, however, it will attack, and its bite is severe. Trapped animals are best seized and held up by the tail, and can be killed by a sharp blow on the neck with the edge of the hand.

People who have tried cooked Musk Rat find the eating satisfactory. Trappers not infrequently eat the animals, and some have compared the flesh to young hare, others to duck. Not long ago it was reported that musquash was served up at a feast-dinner of a Michigan yacht club, 250 Musk Rats stewed in sweet Indian corn being part of the provision for 350 guests.

But take care, previous to cooking, to remove the musk gland!

A copy of a leaflet on the Musk Rat, detailing the Government Regulations, can be had on application to the Department of Agriculture for Scotland, Queen Street, Edinburgh, or the Ministry of Agriculture and Fisheries, Whitehall Place, London.

---

[1] "The Musk Rat in Germany." 'Journal of the Ministry of Agriculture and Fisheries.' November 1932.

THE COYPU (a native name) OR NUTRIA (Spanish for Otter), MYOCASTOR (MYOPOTAMUS) COYPU (Fig. 12).

The agitation attending the spread of the Musk Rat has served to call attention to this imported alien which, in places here and there, is being bred for its pelt. Nutria skins are valuable and in demand. The under fur is soft and thick and durable. Coats made of prime pelts were selling this season from £59 to £130.

The Coypu is a South American aquatic rodent, and one of the largest members of the order of rodents. It is found from Brazil and the Paraguay region, south to Patagonia, so that its distribution covers a considerable diversity of climate from the semi-tropical north to the colder south. In the colder zones of its range the Coypu does not hibernate, and in their pond at the London Zoological Garden ice in winter does not trouble them. The exact family name is in dispute, but the Coypu belongs, not to the Squirrel and Beaver section of Rodents, and not to the Rat and Mouse and Vole section, but to that section of rodents which contains the Guinea-pig, the Chinchilla, the Porcupine. In the Rio de la Plata one of the common names of the Coypu is the Plata Beaver, but among other naked-eye differences the true Beaver can be told by its trowel-like tail, which is flattened out in the horizontal direction.

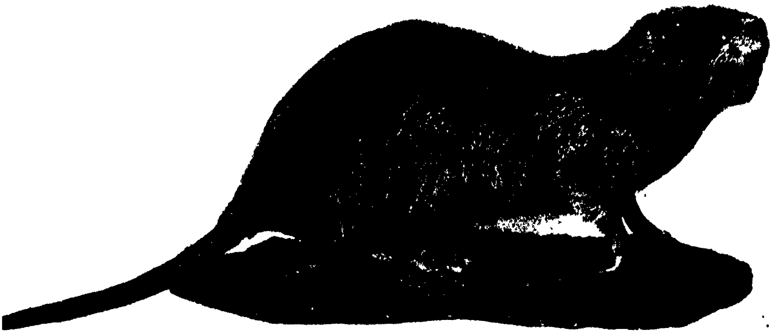


Fig. 12.—*The Coypu or Nutria.*

By kind permission of the Trustees of the British Museum. Natural History.

The tail of the Coypu, which measures up to 16 inches, is round. The body of the Coypu reaches up to 2 feet; the muzzle is blunt; the four prominent incisor teeth are orange-yellow in colour; neither eyes nor ears are prominent; the whiskers are evident; the legs are short, the hind ones being the stronger and having the feet partially webbed. The pelt consists of longer, coarser hairs and a much closer and finer under-fur. It is the under-fur which is valued in commerce, the outer covering of hairs being removed in the preparation of the pelts.

The natural habitat is by shallow lake and stream and swamp and lagoon, and in marshland. They live in burrows near water, the entrance to their home being sometimes below water-level, and a tunnel may lead to an excavated chamber; or they may make lodgments of rushes and reeds supported on natural platforms of grass or other vegetation. The Coypu swims well but is no great diver; when it does dive it can remain under water for two or three minutes.

They feed on the water-plants of their environment, and a number of terrestrial weeds. They are most active towards nightfall, but by no means hide themselves in the daytime, as they seem to take pleasure in both sun and rain. I have visited specimens in confinement at different times of the day and in all weathers, and I never failed to see at least one outside the nest, though often quite close to it.

More experimental evidence is required regarding the breeding habits of the Coypu, but Walther[1] writes of two litters in a year, a gestation period of from 3½ to over 4 months according to the physical condition of the female, and a reaching of maturity as from under 8 months to a year. The number in a litter varies from 3 to 8 according to the age and condition of the mother. An interesting anatomical feature in the mother is that the teats are placed high up along each side of the body; the young are carried on the back of the mother while swimming. The young are precocious; they are born with a dense covering of fur, and are very soon able to run, swim and climb on to their mother.

Well, then, what is to be our attitude to the Coypu in Britain? This is the question which has been put to me and which, I think, may be best answered by a series of statements.

1. France and Germany, among the European peoples, have gone furthest in developing a Nutria industry, and they have both been so successful as even to have reached the exporting stage. So far there have been no outside complaints in these countries, where the Musk Rat menace is well known, of spread outside Nutria farms.

---

[1] Information as to the Natural History of the Coypu is somewhat scrappy. Far the completest account both for the practical man and the student is a German book, 'The South American Swamp Beaver: its Care, Feeding, Breeding and General Management,' by Walther. An English version of this book, by C. R. Partik, is published by Meyer, in Munich.

2. There is at least one recorded instance in Scotland of a Nutria being taken in the open outside a protected farm.

3. Compared with some rodents the Coypu is not enormously prolific. Yet Hudson, in his well-known 'The Naturalist in La Plata,' tells how once, in the Argentine, a law was passed that the Coypu—diminishing in numbers—must be protected. The result was that the old haunts became crowded, and the animals swarmed everywhere in search of food until a plague broke out amongst them—epidemics, not fully understood, wipe out at intervals hordes of rats and mice and greatly reduce the squirrel population—and almost exterminated the Coypu.

4. Some rodents are cunning and clever. Walther naïvely says that the Nutrias are not " mental heroes."

5. The burrowing habit that makes the Musk Rat so dangerous is not pronounced in the Coypu. Yet the Coypu can burrow.

6. The Trustees of the British Museum, with zoological expert advice behind them, recommend that the Coypu be scheduled as an animal to be imported and to be kept only under licence.

7. Small animals have advantages in escape compared with large ones, and the Coypu, because of its size (I am not adding " more innocent habits," for habits can change), would be easier to annihilate in case of proved necessity.

8. It is so difficult to forget that the Coypu is a rodent, and this connotes much that is disheartening.

9. It is impossible to forget past mistakes, and the worry and losses involved. There ought to be some kind of control.

10. Why should those interested in the Nutria and allied industry not get together and agree among themselves as to watchfulness, care, regulations for the industry, and regular report sufficient to justify the Ministry of Agriculture and the Department of Agriculture for Scotland in taking as benevolent an attitude as possible towards a Nutria industry ?

THE EDUCATION OF THE RURAL CHILD.

By PROFESSOR E. SHEARER, M.A., B.Sc., Principal, Edinburgh and East of Scotland College of Agriculture.

A COMMON complaint with regard to our national educational system, in so far as the elementary school stage of it is concerned, is that, not only does it cost a great deal, but that in its method and scope it is insufficiently practical, and in many cases actually unfits children for their work in after life. Such a criticism directly raises the question of what constitutes a proper objective in elementary education. Are we to keep in view primarily the intellectual, moral and social development of the individual, or are we to lay special emphasis on the branches of knowledge that are most likely to prove useful to him in whatever occupation he may adopt? The issue is far from being a simple one. On the one hand, it is an undoubted fact that various aptitudes are most easily and most thoroughly acquired in the early years of life—that practice tends to be inadequately mastered if initiation is too long delayed. In our own country until quite recent times, as still in more primitive communities, most occupations were hereditary. Almost as soon as they could walk, children were enlisted in the ancestral craft, in which they early acquired a high degree of dexterity. The boy reared on the farm picks up in the years of childhood an intimate and diversified knowledge of agricultural practice which the individual making his first acquaintance with farming in later life finds it extremely difficult to acquire. It is also the case that in these days an increasingly high standard of technical knowledge is demanded in all occupations, and that circumstances are too often unfavourable to acquiring such knowledge after leaving school. On the other hand, any system of education worthy of the name must take account of the child not only as prospective craftsman or business manager but as prospective citizen, who will play his part adequately in the community only if his inherent capacities, intellectual, moral and physical, have been developed in the widest and fullest manner possible.

We should probably be giving due weight to both these sets of considerations if we described the purpose of education as being so to develop a child's faculties that he is likely to become a technically competent individual and at the same time adequately play his part as citizen. But while technical competence is thus an ultimate aim, it is open to question whether, in any considerable measure, the future occupation of the child should influence the character of his education. Education at this stage must be concerned with fundamentals designed primarily to develop the child's faculties, to familiarise him with the materials and the tools through which he may arrive at self-expression, to form his character, to induce in him some appreciation of his position in nature and in life. In any case, we are faced with the practical difficulty that, until the child is approaching the end of his school career, it is in a large number of cases uncertain what his future occupation will be; and when we are considering the problem of the education of the rural child, we may take it that, of necessity as well as from choice, a large proportion of rural children will be absorbed into urban pursuits, though equally we must remember that successive generations of country dwellers contain only a very small proportion of individuals who have not been reared in the country.

In what respect then may or should the education of the rural child differ from that of the urban child? The answer lies in a conception of teaching method which is by no means new, but which has received greatly increased attention in the last quarter-century. The essence of this conception is, that elementary education will gain much in reality and vividness by environmental reference—that is by linking it up with objects, facts and processes familiar to the child.

The application of this principle to the education of the rural child involves the introduction into the curriculum of what is commonly termed a 'rural bias.' It should be clearly understood that rural bias is something quite distinct from vocational training. It means no more than that the teaching in rural schools should be intimately related to conditions of rural life, just as in town schools the teaching should be related to what has come within the personal experience of town children.

While rural bias is thus, primarily, an instrument in general education, and is not immediately concerned with the acquisition of facts of vocational interest, one may anticipate that in so far as it tends to develop and reinforce the inherent rural interest, it should lead to the building up of a substantial body of knowledge bearing on rural pursuits, for where the interest lies knowledge is readily acquired.

As has already been pointed out, the idea that rural Elementary Schools should give a general education based upon environment is not a novel one. We find the germ of it in the second charter of the S.P.C.K. (Society for the Propagation of Christian Knowledge) in 1738, in which there is stated as a specific aim the encouragement of industry, the establishment of a unity of rural life, of a community spirit towards both an industrial and a social end, the method employed being to establish in schools arts and crafts connected with rural life. At a later stage Robert Owen and a few other social reformers, in the schemes which they put into operation, displayed an appreciation of the essential affinity between education and environment.

From 1866, under the stimulus of grants by the Science and Arts Department, there had been some teaching of general and applied science in schools throughout the country. In 1856 the Highland and Agricultural Society had given proof of its interest in rural education by obtaining a supplementary charter to enable it to direct and promote the education of young agriculturists by drafting a curriculum of study, holding examinations thereon, and awarding diplomas to successful candidates, and in 1875, on the initiative of the Society, the Science and Arts Department agreed to include a specific Agriculture course in its syllabus. To encourage further the teaching of Agricultural Science in schools, the Society offered bursaries to pupils who had completed the school course, tenable for one year, for agricultural study at a university. To train teachers for the new type of instruction, agricultural classes for schoolmasters were instituted at Aberdeen in 1877 and at Edinburgh and Glasgow in 1888. In 1883 the Scotch Education Department made provision for teaching of Agriculture as a specific subject in the elementary school.

From 1875 onwards, for a period of fully twenty years, instruction in Agriculture and in related sciences, such as Chemistry and Botany, must have been given in many schools in Scotland, if we may judge by the numbers of teachers who took the vacation training classes at the universities, and there is no doubt that for a time there was considerable interest in the movement. That this gradually waned may be attributed to two main causes. In the first place, the training given to the teachers necessarily did not go very deep. Many of them were really ill-equipped to engage in this type of teaching, which as a consequence tended to suffer discredit. Secondly, and more important, the instruction given in the schools was of a dogmatic character, and this fact and the stress placed on its vocational aspect rendered it educationally unsound for children at this stage of development.

In 1898 the Scotch Education Department, in a circular issued to managers of Higher Grade (Science) Schools, outlined suggestions for courses of study involving scientific application of the world around. The aim specifically stated was to implant in children the habit of accurate investigation, a habit which would stand them in good stead in any sphere of after-life activity. Provision was made within the scheme for instruction in Chemistry, Physics, Plant Biology, the properties of soils and other subjects, and the necessity for experimental work in the laboratory was insisted on.

The great step forward, however, as far as Scottish schools are concerned, was the issue by the Department of Circular 374 in 1903, which for the first time made special provision for the child not electing to enter a Higher Grade School. The circular outlined suggestions for improvements in the Elementary School curriculum which aimed at giving new interest to school studies by closely linking them with the world around. In the case of rural schools it was suggested that the studies of the more advanced pupils should be given definite reference to rural pursuits, Agriculture, Horticulture, or any other rural activity, the object being to give a certain definition and reality to the ordinary work of an Elementary School. School gardens were recommended as adjuncts to the more formal teaching of the classroom and the laboratory.

The establishment about this time of the three Scottish Agricultural Colleges gave an impetus to the new type of instruction. The Colleges instituted vacation classes for teachers, drew up rural science courses for schools and, as a pioneer measure, themselves engaged in a substantial amount of rural science teaching in the schools. In 1907, at the instigation of the Department, the Colleges considered the whole question of their organisation with a view to making their educational facilities more available and making them touch more closely upon the interests and needs of rural communities. One concrete result of this was the establishment of numerous school gardens, laid out for the most part by the Colleges, and continuing to be regularly inspected and advised on by them. Associated with these school gardens there has been a marked extension of Nature Study in the schools.

The interest of the Agricultural Colleges in the development of rural science instruction lies not only in its general value as an educational instrument in rural areas, but also more particularly in the fact that to link the rural environment in any substantial measure with the instruction given in the schools involves the introduction into the curriculum of elementary, but well planned and duly co-ordinated, courses in Chemistry, Physics and Biology. As the teaching of these subjects will centre round familiar rural objects and processes, an immediate result will be a quickening of the innate interest of the country child in the things of the country, while a foundation will have been laid in the elementary facts of science to serve as the necessary starting-off point for successful vocational instruction in later years. It is indeed no exaggeration to state that the future success of Agricultural College Extension work on its educational side is bound up with the development of instruction in rural science in the Elementary Schools.

An attempt to relate the teaching in the school still closer to reality is illustrated by a syllabus of rural education published by the Hertfordshire County Council in 1927, which, in suggesting various directions in which a rural bias can be given to ordinary school subjects, urges the value of school visits to farms. That, with children prepared for the visits and under the guidance of the right teacher and with arrangements at the farm carefully organised, occasional visits to farms could be highly educative there is little doubt, but it is also obvious that without these conditions such visits might have little educational value.

While in this article we are chiefly concerned with the education of the child in the rural Elementary School, it is worth while observing that the principle of environmental reference is susceptible of application to education in the rural Secondary School also, and this is being done in at least one school in Scotland and in one or two schools across the Border. In one such school all the usual secondary subjects are taught. On the Science side Physics has been cut down considerably and its place taken by Biology. Not only Chemistry and Biology, but subjects such as Arithmetic, Geography, History, Drawing and Woodwork, are taught with a rural bias. Even Latin is given this bias by selecting for reading passages from Latin authors dealing with rural operations. There are well-equipped laboratories, a good school garden and experimental plots. Boys having professional careers in view omit the more practical parts of the course. It is claimed that the rural trend in the curriculum has not interfered in the least with the success of pupils of the more academic type, but that on the contrary it has contributed to the basis of a good general education, has tended to make pupils all round more alert, and to give them a more directly trained intelligence with a wider outlook. With regard to the type of boy to whom languages and abstract mathematics are a stumbling-block, it is averred that the practical work and the applications involved in the rural bias have helped to bring out, in a notable degree, individuality and resource which were hitherto non-existent.

To return to the Elementary School, we have seen that in Scotland, in the last quarter-century in particular, the principle of education on rural science lines has not lacked official encouragement. Yet it must be confessed that the progress made in this direction has been disappointing. Nature Study, with allied work in the school garden, finds its place in a large number of schools, but the number of Advanced Division Schools which have instituted full two or three-year science courses is small in the aggregate, and much more so in relation to the total number involved. Nevertheless, enthusiastic schoolmasters here and there have amply demonstrated the high measure of success which the adoption of a thorough-going scheme of instruction in rural science can achieve.

There are, no doubt, serious obstacles to rapid progress. Some of these centre round questions of accommodation and equipment, and Education Authorities, too often lukewarm, are not likely in these days to be stirred to greater enthusiasm when they are invited to undertake the provision of a properly equipped laboratory and a suitable school garden—elementary necessities under the new method. The smaller country school, with few pupils grouped into a number of small classes and slenderly staffed, presents a problem of its own, the solution of which is most likely to be found in the principle of centralisation, made possible by modern transport development.

It is suggested, however, that the outstanding difficulty is a dearth of teachers at once imbued with an interest in rural life and trained in the subjects essential to the utilisation of the rural environment as an educational instrument, and it would seem that to meet this difficulty satisfactory provision would have to be made within the Universities and the Training Colleges for a training specially adapted to the requirements of the rural teacher. This suggestion assumes that a considerable body of prospective teachers would elect to work in the country, and, as modern developments have gone far towards minimising the isolation of country life, there is good reason for believing that this expectation would be realised. In particular, one would hope to attract to rural schools a good proportion of teachers who had themselves been reared in the country, and who would bring to their work the important asset of an intimate knowledge of, and sympathy with, country life. The training, while meeting the objects in view, would have to avoid too narrow specialisation and should be such as would not bar the rural teacher from possible transfer to the town.

It has been mentioned that the development of rural science education has its special importance from the point of view of its relation to Agricultural College Extension work, but it has also an importance in relation to the Central Classes of the Colleges. Pupils who have completed a rural science course form admirable material for admission to the College courses, which indeed may be regarded as the continuation and completion of the training begun in school. There is room, therefore, for close co-operation between College staffs and those who are responsible for the rural science courses. In this connection there have been interesting developments within the last year in the areas of both the Glasgow and the Edinburgh Colleges of Agriculture. At selected schools rural science courses are being extended to a fourth (and possibly a fifth) year of study, and in consideration of the ground covered by pupils in these extended courses they may, on admission to College, be excused, under certain prescribed conditions, from whole (Glasgow) or part (Edinburgh) of the first year work in the College Diploma course in Agriculture.

Possibly only a small proportion of those who have followed a rural science course will be in a position to attend a College of Agriculture. For the others, there should exist the opportunity of attendance at Continuation Classes in which technical courses in agricultural subjects would find their place and in the conduct of which local Agricultural College staffs might well assist.

The development of rural science instruction in advanced division schools was recently subject for consideration by a special panel, nominated by the Committee on advanced division curriculum, which had been appointed by the Scottish Council for Research in Education. In the report which the panel presented in 1931 they showed the numerous forms which, according to the circumstances of the locality, this type of education could assume, and they were unanimous in recommending as great development as possible in this direction. It is doubtful whether the Highland and Agricultural Society of Scotland could play its traditional part in the furtherance of Agricultural Education in any more effective way than by using its influence in promoting such a cause.

YOUNG FARMERS' CLUBS.

By W. J. GRANT, M.A., B.Sc., County Organiser, North of Scotland College of Agriculture, Elgin.

EDUCATION AND AGRICULTURE.

A GREAT deal of the progress made during the past half-century has been due to the application of new methods to the manufacture of raw materials and to the transport and distribution of the finished product. These advances have been made possible by the adaptability of the world population. Organised education is an important instrument on which people can rely to secure adjustments in human outlook and action. Early history shows that a purely literary education for ordinary work-a-day people was all that was necessary to supplement a practical training which the times furnished in the exploitation of natural resources by physical strength and simple methods.

Each succeeding generation has relied, by force of altered circumstances, on finer scientific procedures, so that a highly diversified curriculum has been developed in order that the rising generations may be more definitely prepared to play their part in the ever-changing scheme of social and economic life. Organised education of to-day has many phases, of which one has been viewed as of considerable importance to our efficiency as producers—vocational education. Corresponding to the wide variety of occupations in which people are engaged, we have certain well-defined types of vocational education, such as agricultural education, industrial education, commercial education, professional education. The problem of vocational education is to consider the great mass of young people who have entered on their life's task in agriculture, industry, or commerce, and teach them along organised lines which have a direct bearing on their everyday occupation.

The young man of to-day who thinks of entering the agricultural industry does so in face of discouraging conditions. He is embarking on a business which has been forsaken by many who have failed in it during the past five years. He is going into an occupation which has apparently reached almost its lowest ebb. Unless the farm boys of to-day are to benefit by the experience of their predecessors, in the form of systematic instruction, our next generation of farmers may not be better off than our present one. Any farm boy who hopes to make farming his life-work needs training for that work, just as the boy who intends to become a professional man or an engineer.

The problems of agriculture to-day are not confined to the production of crops and stock, but stretch into the business world. The economic side of agriculture has assumed considerable importance, and this necessitates a new line of study, which should bring producers in closer touch with each other, so that individual interests disappear in favour of community interests. If the farmers of the rising generation bring to their task the desire to see and make things grow, and if they have some knowledge of the broad social and economic conditions under which they work, they are the type of men needed. The depression of the past few years has done much to reduce the rural population and to beget a feeling of disinterest in agriculture on the part of the rising generation. Easy and cheap transport, with the allurements of the provincial town or city and its many forms of entertainment, attract the rural youth from the place where, in years gone by, both pleasure and education were obtained. It would seem as if they did not find much pleasure in their occupation.

There is an insistent need for vocational training along carefully studied lines, where the science, the economics and the practice of agriculture form the main body of the training. Agriculture is our most important industry and its problems should be amongst the foremost for consideration. Education has played its part in the increased production of crops compared with fifty years ago. Changes have taken place slowly. The adult farmer clings desperately to his own way of doing things. He accepts suggestions with a certain scepticism. The case is different with a younger generation. They welcome new and improved ways of doing commonplace things. There is at present sufficient information in regard to the science, economics and practice of agriculture to teach many generations, but just how and when the training is to be given is a matter which deserves careful consideration. Such an education must meet the needs of those who have just entered upon farm-work and of those who have already had years of practical experience. A comprehensive training must teach the practical side of agriculture, the scientific principles underlying the practice of agriculture, and the business side of the enterprise by the keeping of records.

Various methods of educating the rural community in the processes of nature going on around them have been popular. Within the past decade we have seen a reintroduction of agricultural subjects into the curriculum of our rural day schools in this county and in others in the North of Scotland, under the name of Rural Science. The subject is taught by the local headmaster, after a short period of training in the elementary principles of soil and plant science. The last two years of the pupil's schooling—12 to 14—include this subject. It forms a good foundation on which instruction of a more advanced and a more practical nature may be given in day or evening classes, by more highly qualified instructors who have had a training in an agricultural college and who have a sound knowledge of the practice of agriculture. With such a training the young farmer or farm-worker can take a more intelligent interest in his work, can think more accurately on practical lines, and can the better appreciate results of research which from time to time appear in the Press.

But the objective of usefulness to the community, as well as to self, is not achieved by such an education. The sense of citizenship and leadership, the social aspect of a true education, is wanting. Such a training can be got only from experience. The sense of responsibility must be realised, and it is only in the formation of some local association or club, directed by capable advisers, that such an education can be obtained. The Junior Agricultural Club movement, whose history, objects and constitution I shall describe, seems to be an organisation which can accomplish a great deal of useful work, practically and socially, in a rural community. The organisation of rural persons into local groups is comparable with the various bodies of business, industrial and professional men found in every progressive city.

WORLD-WIDE CLUB ORGANISATION.

The club movement started in the United States of America over 30 years ago, and has since then become almost world-wide. The following statistics indicate fairly accurately, at date of writing, the penetration of the organisation in different countries: U.S.A. has 60,800 clubs, with an enrolment of 890,000 boys and girls; Canada has 2000 clubs, with a membership of 20,000; England and Wales has 150 clubs, and a membership of 3000; Scotland has about 30 clubs. Australia, New Zealand, Denmark, Germany, Poland, Sweden and Norway are each well-developed in club organisation.

HISTORY OF CLUB ORGANISATION.

The modern club idea was an attempt to revive interest, in 1899, in the Farmers' Institutes in Macoupin County, Illinois, U.S.A. Mr W. B. Otwell brought forcibly to the attention of the people the opportunity for interesting the youth in farm and home improvement. He offered to supply one ounce of high-grade seed corn to every boy and girl in the county who would promise to plant the seed and make an exhibit at the Farmers' Institute. Seed was distributed to 500 boys and girls. The interest of the parents was aroused, but few recognised it as the beginning of a movement which was to spread to the entire country and far beyond and become a potent factor in the improvement of the farm and of the home. Junior Corn contests began in many other States. It was a mere suggestion of what club-work is to-day, but it marked the beginning of a new system of education in which the boys and girls, under the direction of the U.S.A. Department of Agriculture, State agricultural colleges, county extension agents and parents, undertook on their farms and in their homes to demonstrate one or more improved practices. Projects other than corn-growing were undertaken—the growing of clover, the growing of flowers, the cultivation of the soil. Exhibitions of crops were held, and this system of education expanded. The work was organised mainly by local teachers, who had the assistance of special instructors from agricultural colleges.

With the passing of the Smith-Lever Act in 1924 there was created a new system through which practically all extension work of the State agricultural colleges and U.S.A. Department of Agriculture was to be conducted. State club leaders were appointed, who brought about a marked improvement in the method of organisation and in effectiveness of work among young people. Outstanding developments of the first three years were the adoption of a local leader plan and the definite organisation of boys and girls into clubs, which were known as 4-H clubs. The term signifies the four things that must be trained by the boy or girl to ensure success in club undertakings—head, heart, health and hands. The symbol of the 4-H club is a four-leaf clover with an H on each leaflet, the clover signifying the purpose for which the first clubs were created—soil conservation.

The number of practical projects undertaken by the members was increased to include baby beef production, lamb-feeding, pig-keeping, potato-growing and market-gardening. The period 1914-17 saw the beginning of numerous club practices that have since become standard procedure in club organisation, such as separate club sections at county shows, judging competitions, &c.

During the years following the war period the services of many county club agents were dispensed with, this resulting in a corresponding reduction in the enrolment of young people for demonstration work. This temporary phase over, club-work was entered into with better organisation. When the club idea was new the organisation was haphazard, and the methods or lack of methods depended on the ability or interest of local leaders. Under the present system the county club agents meet interested men of the community, and everything is arranged in consultation with both adults and juniors. The latter appoint their own office-bearers and generally their club leader. After a project, such as calf-rearing, is selected, the problems incident to the project are discussed by the county agent, who recommends the practices to be adopted and shows methods of keeping records. Arrangements are made for the inspection of the projects by club members and interested persons. This helps to bring recognition to the boys and girls, and allows opportunity of discussing the practices used.

Annual gatherings of club members are held at the State agricultural colleges, where short courses of lectures and demonstrations may be given. The object is to acquaint club members with the college, as well as to impart information and offer recognition to club organisation. Nearly every club holds judging competitions, and the winning team in one State may enter a national competition, from which may be selected teams for international contests such as are held by the Royal Agricultural Society of England at their annual show.

Exhibits at local fairs are an important part of summer work. In many States, summer camps are held. The camp may be a semi-permanent structure, where the clubs meet and conduct competitions of various sorts including both practical and social items. Conferences of State club leaders are held, from which each leader carries away the results and experiences of his many colleagues to his local leaders, who also meet in conference annually.

In all the work, the agricultural colleges seem to take an active part, recognising that the rural boy and girl frequently constitute as much of a rural problem as do crops and stock, and that efforts on their behalf, leading to the teaching of better co-operation and a more intelligent and useful interest in rural welfare, are justifiable objectives of extension work.

Vocational Agricultural Education.

Since 1917, vocational agricultural education has been given in the rural High Schools of America to pupils over 14 years of age. At the suggestion of the State Department of Education in 1922, many agricultural teachers organised their classes into clubs to stimulate greater interest in the practical side of the work and in co-operative experience. In 1928 the High School students were organised into the ‘ Future Farmers of America ’ (F.F.A.), a movement which has been widely developed and appreciated. It is more selective than the 4-H Club, in that the members have attained to a higher technical knowledge, and that no chapters can be established in schools where organised instruction in vocational agriculture is not given under the provisions of the 1917 Smith-Hughes Act. Members carry out a programme of supervised practice, and may retain active membership for three years after leaving school. The age-limits are 14 to 20 years, whereas the age for 4-H clubs is 10 to 18. The organisation of the F.F.A. is similar to 4-H clubs; members manage and conduct the work under the guidance of adult leaders and advisers. There are four 'degrees' of proficiency or achievement in the movement. A junior member, who has just started High School, is a 'Green Hand.' By the satisfactory completion of one year in vocational agriculture, including a supervised practical project and a certain sum of money deposited in the Thrift Bank, which is carried on in conjunction with the movement, he may become a 'Future Farmer.' With a continuance of satisfactory progress he becomes a 'State Farmer,' and then a full-fledged 'American Farmer.' The various degrees are conferred by ritual and ceremony. One of the values of such a training is that ex-F.F.A. members are useful as local leaders for 4-H club work.

INTRODUCTION OF CLUBS TO BRITAIN.

The introduction of the Young Farmers' Club movement into Britain was brought about by the 'Daily Mail' in 1921, under the title of the International Federation of Young Farmers' Clubs. Through the co-operation of 'United Dairies Ltd.' the first club was inaugurated at Hemyock, Devon. Each member was supplied with a heifer calf, whose dam yielded not less than 600 gallons of milk in a year, the purchase price being advanced by the company, free of interest, for one year, on a promissory note backed by the member's parent. Records of food, &c., used were kept, and the calves were exhibited at Hemyock Store Stock Show a year later, to be inspected by a panel of judges. The animal could be retained by the member on payment of the original price, plus ten per cent of its present value, which percentage was devoted to club funds, or could be sold by auction and the surplus, after payment to the guarantor and a levy to the club, be retained by the member as a reward for labour.

Other associations, such as the Dairy Shorthorn Association, the British Friesian Cattle Society and the Sussex Herd Book Society soon became interested in the movement, and the formation of new clubs went on rapidly. Within two years of the inauguration of the first club, 31 clubs were formed in Great Britain. An excerpt from the foreword to a 'Daily Mail' bulletin of 1922 indicates the policy which prompted

Lord Northcliffe to begin the formation of Young Farmers' Clubs:—

"It is clearly realised that present and future club members may not espouse Agriculture or Horticulture as a means of livelihood in after life, and whatever view may be held as to the wisdom of attempting to convert an essentially industrial nation into an agricultural community, it is certain that children, once having been closely interested in some phase of agriculture, will continue in future years to produce food as a hobby. Than this, few results of greater benefit to the community can be imagined. . . . Moreover, the Young Farmers' Clubs serve the purpose of being a power for agricultural education of tremendous potentiality."

In 1924 the Ministry of Agriculture took over the supervision of the clubs from the 'Daily Mail,' realising both the educational and practical value of the movement. It was not intended, however, that the headquarters of the movement should remain permanently at the Ministry. It considered that, when properly organised, the conduct of the movement should be carried on by a voluntary and self-governing body independent of State control. To this end the Ministry, in 1928, enlisted the aid of the various organisations interested in the problems of country life, many of which were working together as members of the National Council of Social Service. The Ministry invited the Council to help in building up an association of clubs. This was effectively done, and on 5th May 1932 the National Federation of Young Farmers' Clubs started its career. There are, at date of writing, about 150 clubs in England and Wales, with a membership of approximately 3000. The movement has been heartily supported by the Ministry of Agriculture, the Royal Agricultural Society of England, which has given facilities for international cattle judging contests and has generously contributed to the funds, the British Dairy Farmers' Association, which arranges for a Stock Judging Competition at the London Show, and by the Press and many commercial enterprises.

ORGANISATION OF CLUB WORK IN ENGLAND AND WALES.

Membership of clubs is open to any boy or girl of 10 to 20 years of age. The decision to form a club rests with persons of this age, and the office-bearers (chairman, secretary, treasurer) are appointed from their number. Persons of 21 years and over may become associate members, and although they may take part in all meetings and functions of the club they are not allowed any administrative power. An Advisory Committee, consisting of three or four associates and a club leader, assists and advises in the conduct of club-work. The type of stock or crops to be raised is decided upon, and arrangements are made to raise funds to purchase the necessary animals, seeds, &c. The money may be raised by the efforts of the members, or by persuading interested persons or organisations to lend the necessary sum or to arrange a guarantee at the bank. The stock or equipment is bought by the Advisory Committee and distributed by ballot to the members. Some of the members may be able to provide stock for themselves, but generally the money has to be raised as above.

Record books are given to each of the members, who undertake to make careful and accurate entries of times and methods of feeding, rations used, increase in live-weight, cost of foods, &c., in the case of stock, and of cultivations, manuring, harvesting, yields, &c., in the case of crops. The parent or guardian usually signs the declaration, and the stock is insured in order to reduce the risks of those who have advanced the money.

Advice is given to members by the Advisory Committee, and by the Agricultural Organisers of the County Councils, on the best methods of feeding, and visits of inspection may be paid to see that the animals are properly looked after. At the end of the period, which is usually a year, the animals are brought together and judged and a sale may be held. The price obtained for the animal goes to pay off the guarantors for the original price of the animal, ten per cent may go to club funds, and the remainder is given to the member as a reward for labour, cost of foods, &c. Members meet periodically to discuss results, and to listen to lectures and addresses on the technical and practical sides of the piece of work under consideration.

The Club Movement in Scotland.

The club movement began in Scotland in 1923. The originator was Mr John Robson of Lynegar, Watten, Caithness, who became interested in the 4-H club-work in America. In co-operation with Mr Sutherland, the local headmaster, and Mr Black, County Organiser of the College of Agriculture, a club was formed at Lanergill under the auspices and rules of the 'Daily Mail' International Federation of Young Farmers' Clubs. The project in the first year was pig-feeding, while the second year's programme of practical work was the growing of ten cross-bred varieties of oats. Several clubs of this nature were organised under the auspices of the North of Scotland College of Agriculture, but the system did not prove a complete success, and has now been replaced in the North of Scotland by an organisation which caters for an older type of pupil.

The original scheme really included two classes of young members—those who were still at school—10 to 14 years, and those who had left the rural school and might be at work —14 to 18 years. This combination did not seem to be attended by the greatest permanent success. More boys who had left school were interested when the club-work was organised entirely outside of the regular school system. It is more satisfactory to adjust our system of agricultural education so that it shall consist of two parts—the teaching of those in school and of those out of school. Although it is not suggested that a boy of school age should be denied the benefits of any club-work, yet the main object should be to reach the boy who has left school and who may be entering on a career of practical agriculture for which more than efficiency in the manual operations of the farm is necessary.

In most counties in the North of Scotland, the curriculum of rural schools includes the study of rural science, which is a name applied to the science of soil, plants, air, &c., and therefore instructs the pupil in the knowledge of his environment. Outdoor work is carried on in the school garden, where small experiments on the growing of crops are undertaken. The practical side is thus constantly kept before the child, and indeed this side of it is fully as important as the majority of the indoor work. The great feature of the outdoor work is not the results of the experiments, which are on too small a scale to be of great practical value, but the chance the teacher gets to develop the powers of observation of the pupils. Thus we have in the rural schools of the county of Moray, where the teaching of the subject was first tried experimentally in 1922, and in many other counties, a type of education with an agricultural bias and with a practical project.

Another feature which is likely to tell against club-work, as described above, is that although undoubtedly the idea of each member undertaking a practical project is a desirable thing, it may mean, in the case of a great many rural young people, exclusion from the organisation. Young farm-workers, the children of rural workers and many others, who may yet be interested in agricultural matters, have not facilities for keeping stock or growing crops. The club must not be confined to young farmers, but must be open to all who care to enrol. Any progressive movement must consider the method by which the greatest good is secured to the greatest number.

Clubs in North of Scotland.

The organisation of clubs in the North of Scotland Agricultural College area is the outcome of a careful study of the conditions obtaining in the various county districts, by Mr G. G. Esslemont, M.B.E., B.Sc., Director of County Work. The designation of the organisation has been changed from Young Farmers' Club to the wider one of Junior Agricultural Club. The club is open to young persons of both sexes between the ages of 16 and 25 years. Membership may be continued after that age as associate members, these having all the privileges enjoyed by junior members, excepting a voice in the administration of the club and eligibility for competitions. There are now 25 clubs of this type associated with the North of Scotland College of Agriculture. Clubs have also been started in the Edinburgh and Glasgow College areas in the counties of Angus, Perth, Stirling and the Borders, but these appertain to the English type, being comprised of youths from 12 to 20 years of age.

ORGANISATION OF CLUB-WORK.

The County Extension Department of the College of Agriculture is the promoter of the organisation in the college area. County Organisers have been responsible for the initiation and formation of these clubs in their respective districts, and in respect of this and other duties performed by them in connection with club organisation they are termed County Club Leaders. The scheme of organisation which governs and regulates Junior Agricultural Clubs embraces Local, County and Central Committees.

1. *Local Committees.*—These bodies are responsible for the conduct and control of the individual clubs, and for convenience of description may be subdivided into Advisory Committees and Executive Committees. The 'Advisory Committee' consists of five or six adults (over 25 years) who are interested in the training and welfare of young people. In conjunction with the County Club Leader, they assist in the promotion of the club in the parish or district, and aid and direct its work. One of their number is Chairman of the Committee and Honorary President of the club, while another acts as Local Club Leader. The latter's duty is important, and the success of a club depends to some extent on his powers of organisation and initiative. He is responsible for seeing that all club activities are carried out according to programme and that the business is properly conducted. Along with the Advisory Committee he takes charge of any competitions or demonstrations arranged for members, so that all junior office-bearers may be free to take part.

The 'Executive Committee' is elected after a public meeting has been called and it has been decided to form a club, and members have been enrolled. This Committee is appointed by the members from amongst their own number—*i.e.*, 16-25 years of age. The number need not be more than six or seven, composed of a chairman, vice-chairman, secretary and treasurer, and two or three others. Upon them devolves the executive work of the club. They are directly responsible to the members for the conduct of the organisation, such as arranging meetings, competitions, &c. The Chairman presides at the ordinary meetings, at which any questions or discussions requiring a vote are confined to members. The Secretary keeps the Minutes of all meetings, deals with correspondence, calls meetings, &c.

2. *County Committees.*—A County Committee is formed by one or two representatives from each of the various Local Committees and representatives of the Agricultural Education Advisory Committee for the county area. Its chief function is to co-ordinate and regulate club organisation and club-work, and to promote inter-club activities.

3. *Central Committee.*—This is formed by representatives from each of the County Committees embraced in the area of the College of Agriculture, along with representatives from the Board of Governors of the College and the Director of County Work. Its function is to link up and co-ordinate club-work in the various counties associated with the college, and to promote inter-county club schemes.

Constitution and Rules.—A Constitution and Rules is drawn up for the regulation of local clubs. It deals with the objects of the club; election of office-bearers; enrolment of members; appointment of Special Sub-Committees; conduct of meetings; order of business; annual general meeting; members' subscription; associate members.

Club-Work.—Having organised a club, it is necessary to decide the form of work to be undertaken. A definite programme of work is a very essential phase of the movement. The only excuse for the existence of an organisation is what it accomplishes. If it has a purpose and has carried that purpose to a successful conclusion, it has justified its existence. The test of usefulness of any organisation is not the statement of purpose contained in its constitution, but rather the programme which it sets up for carrying out the purpose and how successfully this is accomplished. Again, it is the programme of work which holds the club together; it is that which gives members something to keep up their interest.

Club-work may include anything relating to the education and training of young people in the science and practice of farming and kindred industries. The work of the year may be divided into two sections—indoor and outdoor. The former should be undertaken during the winter months and the latter mainly in summer. It is important that meetings be held regularly, and that as far as possible the whole series of meetings for a winter session be arranged as early in the session as possible, if for no other purpose than to instil into the minds of members the idea of looking and arranging ahead.

Indoor Work.—This will generally take the form of lectures, talks, discussions and debates. There is endless scope of subjects suitable for this purpose. Although the titles of papers which have been given at most meetings indicate that the vocational side is well looked after, it is not necessary, nor is it advisable, to have at every meeting a purely agricultural subject. It is good occasionally to have a subject of general interest. Neither is it a good thing to have too many highly technical subjects. The results of modern research are best disseminated by men like County Organisers, who know local conditions and can sift out from the highly academic publications of research institutes the parts that are likely to apply to practice. A thoroughly good programme should have about an equal distribution of scientific and practical subjects, but here a word of caution to organisers of clubs is necessary—Do not make the mistake of foisting subjects on unwilling members ; let members have the first opportunity of suggesting topics. The duty of the College Officer is to teach the sciences underlying agriculture—not to teach farming—and there is ample opportunity of doing this unobtrusively at practically every club meeting, for whenever a practical subject is discussed it has its scientific side and may even have been the subject of considerable research. It is here that the attendance of County Organisers at club meetings is of value.

It was suggested some years ago that the Agricultural Colleges should employ practical men as lecturers. The Extension Department enlists the aid of successful farmers in the district to relate to club members their methods and experiences. There is a large amount of information available from both practical and scientific sources, and it is for the benefit of the community and the country if such can be imparted to future farmers and farm-workers. Even the trades and professions which are closely allied to agriculture can find a place in a good syllabus.

Apart from the purely vocational side, club meetings, when properly conducted, initiate members into the routine of public business. The Chairman and Secretary especially should be well instructed in their particular offices. The Minutes of meetings should be read, approved and signed, and business should proceed strictly as laid down in the agenda. To many this seems unnecessary, but the club movement is designed to teach the duties and the responsibilities of citizenship. Some leaders of men may be born, but the majority are made. It has been observed in one club in this county, which has been conducted on the above lines for four years, that the original members have developed a confidence in themselves which is only begotten of experience. Their ready speech is locally attributed not to increase in years but to experience in club-work. Far too often one has observed in meetings a seeming lack of knowledge of public business, or a lack of courtesy to the Chairman and fellow members. A movement which has as one of its objectives the promotion of leadership and co-operation should make a special appeal.

Outdoor Work.—The outdoor section covers a very wide field of practical subjects, which might include stock demonstrations and judging competitions, practical competitions such as ploughing and hoeing, crop-growing competitions, exhibitions of agricultural produce, experimental work on crops and stock. The most prominent work of many clubs has been connected with stock, and while this is an important subject, it should not be the sole object of a club to turn out prize-winning teams. The programme of such a club is unbalanced and indeed is not equally fair to all members. Clubs should cater for rural people, and the greater the variety of subjects the more successful is the club likely to be.

STOCK DEMONSTRATIONS.

The assistance of successful breeders of pedigree or of high quality commercial stock to demonstrate to members is of special value. Considerable difference of opinion exists as to the best method of conducting a demonstration. It would seem that a single animal of good type and conformation, as a 'model' for the demonstrator, is to be preferred to two animals—one to show good points and the other faults. The argument that with two animals the educational value is higher, as comparisons of points can be made, is not conclusive, because just as one animal cannot usually show all the good points so another cannot show all the bad ones. In a properly conducted demonstration, the educational part comes after the members have been put to judge a class of four or five animals and the demonstrator makes his placings. The points of difference between the animals must be clearly brought out or he has failed in his instruction. It must always be kept in mind, by those who organise demonstrations and competitions, that the competitors are more or less inexperienced judges, and therefore the animals in each class should have at least a distinct winner and a distinct last. Animals should not be selected which are so near each other that so many expert judges will place them in so many different ways. It then becomes largely a matter of chance and the demonstration loses its true practical and educational value.

COMPETITIONS AND EXHIBITIONS.

Everyone is interested in a contest. For that reason it is advisable to bring as many competitions as possible into the programme. These generally ensure a good attendance of both members and associates. Ploughing and hoeing-matches are popular, and it is a good education for the office-bearers to organise such events. The most important point to note in connection with such tests of practical skill is that they be conducted on strictly utilitarian lines. A race of champions has grown up, whose success has depended to some extent on skilful manipulation by hand of the furrow or of the drill. As far as possible everyday conditions of work should be the order of the day.

With a few exceptions, crop-growing competitions have not yet been included in club programmes, but it is a subject worthy of consideration. A stated acreage of cereals, roots, &c., may be decided upon, and the crops weighed at harvest. Each member competing could make a report on the cultivation, seeding and manuring of the crop, and, if possible, the previous history of the field. Apart from the competitive element, such an event has some constructive value. Seed and root shows are held by many clubs. No show, however, should be held without first having a judging competition. Before the official judge makes his awards, the members should be asked to place the exhibits. The show judge, in making his decisions, should indicate the points of importance in selecting the various winning specimens.

EXPERIMENTAL WORK.

In the matter of the introduction of new varieties of seeds, manures, &c., the assistance of club members can be enlisted by the College Organiser. The ideal that every farmer should be an experimenter will be more fully realised if interest in this type of work is aroused in the younger generation. It is true that experience is proportional to intensity and not to duration, an axiom which at once refutes the idea that the eighty-year-old crofter has more valuable advice to give than the younger experimentalist. Experience, along with experiment, is the combination which has most information to impart to the apprentice farmer. Every County Organiser knows that when trials are being conducted in a district, they demonstrate themselves. Neighbours visit the farms several times during the season, and the progress of the plots, which forms a valuable topic of conversation, is fully discussed long before the official inspection takes place. The multiplication of tests in a district adds to the interest, and this can be more successfully carried out under the auspices of a local organisation.

The above outline indicates some of the activities which have interested clubs in this area. During the first few years of the movement it has been customary to import speakers to address indoor meetings, but a camaraderie has sprung up between members, which has dispelled the popular idea of the average rural person that he or she could never attempt to address a local audience without being subjected to derision. Members learn from each other, and a sympathy and co-operative spirit is brought into the work. There is, in every meeting, a social aspect the value of which is difficult to assess; but certain it is that a movement which inclines to introduce a community sense amongst the young people will prove a help, not only to the individual in the community or to the community itself, but to the country at large.

FUTURE OF CLUB MOVEMENT.

The development of club organisation has been going on in the North of Scotland for four years, and there has not yet been time to establish the whole scheme of organisation outlined above. All energy has been devoted to getting clubs built up on as sure a local foundation as possible. The necessity for organising on a wider territorial unit than the parish or district is now arising, and County Committees are being set up in order to bring uniformity and co-ordination into the club activities. The results of a county organisation have been the promotion of inter-club lectures and debates, inter-club judging competitions, interchange of results of field trials, and inter-club exhibitions of seeds, roots, &c. The completion of the scheme by a further centralisation, with representatives of all the counties in the college area, readily follows, and only then can the best results of the movement be achieved. It is by sifting the experiences of the several districts that the more important aspects of club-work can be generally made use of. The movement has possibilities for good to the country, but just as all permanent changes are inclined to come slowly, so the full benefits of club organisation will be measured over a period of years.

SOME PRACTICAL ASPECTS OF RECENT PASTURE RESEARCH.

By ARTHUR CRICHTON, M.A., B.Sc., Duthie Experimental Stock Farm, Rowett Research Institute, Aberdeen.

Deliberate formation of pasture-land dates from the latter half of the eighteenth century. Before that time land was forced out of cultivation because it had got into a foul or exhausted condition by continuous cropping. It was allowed to tumble down to grass, or at best hay seed was sown. About the end of the eighteenth century grasses from different sources began gradually to be introduced, and later on, when farming passed through a prosperous era in the early nineteenth century, special attention began to be paid to individual pasture plants, and their cultivation was encouraged by societies and other bodies interested in agriculture. In the later part of the nineteenth century pasture-making made little progress. Early in the twentieth century, with the recognition of the value of wild white clover, there was a tremendous impetus to grassland development.

Somerville, Gilchrist, Middleton, &c., by their work showed that pasture was not one department and arable crops another department of farming, but that there could be a distinct relationship between the two, and that cropping could be organised into a definite rotation of which grass was an essential part. They showed that by the use of wild white clover and intelligent manuring a productive pasture could be established quickly, and that when ploughed down it fertilised considerably the crops which followed. Up to and including the years of the Great War much progress was made in devising composite mixtures, the basis of which was wild white clover. Pastures on arable farms rapidly improved all over the country, and tribute is due in this connection to the work in Scotland of Findlay, M'Alpine and other members of the Colleges of Agriculture.

A certain amount of attention was also given to permanent pastures, which in many cases now became very much less productive in comparison with rotation grass. A considerable number of experiments were carried out to test the effect of different manures and combinations of manures on pastures which had not been seeded down with good mixtures containing wild white clover. These are described in a number of interesting articles in the 'Transactions' by Hendrick, Shirra

Gibb and others. With the prosperous era for agriculture during and immediately after the war the area under crops increased considerably. Much land that had been lying under pasture was broken up for crop growing. The problem became one of intensive cultivation of the remaining grassland in order to get as big a return as possible.

Thus the practice about ten years ago, when more land was again being laid down to grass, was that the basis of good grass farming was the use of wild white clover, the application of phosphates and adequate stocking. But the potentialities of grass production were beginning to be recognised, and with the establishment of the Plant Breeding Station at Aberystwyth and the results of an experiment carried out in Germany during the war, there came a strong stimulus to research into pasture formation and management. It is probable that the German experiment referred to had a greater influence than any other in stimulating the interest of practical agriculturists and in making them realise that by intensive manuring, controlled grazing and expert management, grass could be made to produce two or threefold.

Dr Warmbold was head of the Hohenheim Agricultural Station for a period during the war. When food supplies were running short, due to the blockade of German ports, and home food production became vital, Warmbold introduced his method of increasing grass-land production. His system has been followed and tested out at considerable length in this country, and a short description will serve as an introduction to a discussion of the factors involved.

His plan was to take a field of grass and divide it by fences into a number of paddocks, each with a water supply of its own. Each paddock was designed to be large enough to carry a stock of milking cows for from three to five days. The cows were put on when the grass was considered to be at its most leafy and nutritious stage and when, if eaten down several times during the growing season, it would not suffer unduly from continuous defoliation. After the cows had taken the best of the grass, dry cows or store stock followed on to eat the foliage evenly down so that the next growth would also be close and even. The stocking was thus intensive and moved regularly round the paddocks. After each grazing the droppings were spread, a dressing of a nitrogenous manure applied and the grass allowed to come again to its most leafy stage. In the winter, dressings of lime, phosphates and potash were applied to compensate for the amounts of these fertilising constituents removed in the grazing season. The result was that Warmbold increased the carrying capacity of the Hohenheim pasture threefold. From 1 cow to about 1½ acres the productivity of the field was increased till it carried 2 cows per acre.

This was a big advance, and the system was carried into practice in this country on a considerable scale. The attention of agricultural experimentalists was focussed on this intensive grass production, with its concomitant problems of suitable seed mixtures and finely adjusted manurial applications to compensate for the tremendous drain upon the soil, especially by heavy milking dairy cows.

A cow giving 600 gallons of milk in the grazing season would remove in nitrogen the equivalent of approximately 3 cwt. sulphate of ammonia. This means 2 cwt. per acre if grazed at the rate of 1 cow to 1½ acres, but 6 cwt. if the stocking is equivalent to 1 cow to ½ acre. The principles of manuring to which farmers were accustomed thus became upset. It was found in many cases that large applications of nitrogen without a corresponding intake of the other basic manures, and without very carefully controlled grazing, stimulated the grasses to such an extent that they dominated the pastures to the almost total exclusion, in many cases, of the clovers.

The Hohenheim experiment was a spectacular piece of work, and the factors involved immediately became the study of agricultural experimentalists not only in this country but all over the world.

Woodman and his co-workers at Cambridge have made a study of the yield, composition and nutritive value of grass from plots which were cut on a system intended to represent frequent and close grazing, and compared the results from similar plots where the herbage was allowed to grow to a more advanced stage of maturity. They found that while the yield of dry matter was actually less from the closely cut plots the feeding value was greater. The frequently cut herbage had an entirely different composition ; the percentage of fibre was from a half to a third what it was in similar pasture allowed to mature, and the protein content was two to three times greater.

Two of the factors involved in the Hohenheim experiment were intensive nitrogenous manuring and rotational grazing. There is very little exact evidence as to the comparative stock-carrying capacity of pasture maintained under the two systems. Other factors have obscured the results of rotational grazing or intensive nitrogenous manuring *per se*. At the Duthie Experimental Farm an area of 48 acres of temporary grass was divided into two parts, one an area of 15 acres which was grazed in the ordinary way, and another an area of 33 acres which was sub-divided into twelve plots, six of which received sulphate of ammonia dressings and six of which got no artificial nitrogen. The whole area to begin with was manured in the same way. Adequate dressings of lime, phosphates and potash were applied. In the first year the benefit derived from nitrogen was similar to that obtained at Hohenheim. In the next year the advantage was much less, and in the third year nitrogen appeared to be actually harmful. There was a definite change in the composition of the sward, especially in the amount of clover in the plots receiving the nitrogen, and it may be that the manuring was not properly balanced in that the amount of lime, phosphates and potash was too small in proportion to the large quantity of sulphate of ammonia applied per acre over the three years. Using equivalents for the different classes of stock, it was reckoned that the rotationally grazed area had carried a considerably larger number of stock than the area grazed in the ordinary way, and it was concluded that if it is at all convenient to divide the grazing area into small units with access to water, it would be profitable to do so. This system, it may be mentioned, is now followed as far as possible on this farm. By this means it is possible to get a greater return from the grass, and also better to organise grazing for winter and early spring keep. Fields can be specifically laid aside towards the end of the season for foggage for outwintered stock, or left not too closely grazed and then manured for early spring keep.

Under rotational grazing it is found that when the herbage is eaten before it passes its most leafy and nutritious stage, its composition is more like a protein rich concentrate such as linseed cake. The ratio of carbohydrate to protein, the nutritive ratio, gets wider the longer the period between the grazings, and it is reckoned that on the average three to four weeks is the optimum interval. The interval, of course, depends on the season and the weather, and the plan should be to stock on the safe side in order to eliminate the risk of drought and to bring the mowing machine into use and hay the surplus herbage in the months of June and July. The question of the utilisation of this surplus will be discussed later.

This new aspect of the composition of young grass makes it essential to watch supplementary feeding more closely. To have a balanced ration in the flush weeks of the growing season it will be necessary to feed carbohydrate rich concentrates like maize or oats, instead of materials like cotton-cake which are suitable enough for supplementing more mature pasture. Otherwise it may be that even for milking cows there will be an excess and, therefore, a waste of protein which is more expensive than carbohydrate. Woodman reckons, for instance, that the young leafy pasturage of spring may contain sufficient protein for seven gallon cows, while providing sufficient starch equivalent for only five gallons.

This somewhat protein-rich young grass has essentially a laxative action, and it appears that not only is it necessary to balance it up with starchy foods, but that it may also be necessary to ration it to the cow just as winter feeding is rationed. It is suggested that cows, or for that matter other cattle, might be allowed to graze only for a limited time, the length of the period being reckoned to be sufficient for the cows giving the lowest amount of milk. The higher yielding cows would then get supplementary feeding according to yield. By this method, the lower yielding cows would get a better balanced ration, and the scouring effect of an over-feed of young grass might be avoided. An experiment carried out for two years at the Experimental Farm at the Rowett Institute is of interest in this connection.

Forty cows were divided into two groups. Group 1 was allowed to graze plots on the rotation system in the ordinary way, while the cows in Group 2 were grazed for a period of one and a half hours in the morning and one and a half hours in the evening and confined in a paddock for the rest of the time. Before going to grass, Group 1 was producing more milk than Group 2. In a few days the milk yield of Group 1 fell and that of Group 2 rose until Group 2 was actually giving more than Group 1 had done before they went out. This difference was maintained right through the grazing season, although it tended to get less towards the end. There may be, of course, more than one explanation of this result, but whatever explanation is the correct one it shows the importance of controlled grazing. It may be that the cows on the limited grazing wasted less food by exercise. They grazed steadily for most of the time they were on the pasture, and rested when they were in the paddock, while those on unlimited grazing may have eaten more or less irregularly. Then, again, the plots on which the cows in Group 2 were grazed were cleaner because a large proportion of the droppings were left in the paddock. But the area on which Group 2 grazed actually carried a larger head of stock per acre than the area allotted to Group 1. This seems to indicate that the cows in Group 2 did eat less, and they seemed to scour less. It is interesting to speculate on the relationship of these results to the well-known fact that cattle wintered indoors lose more weight when they go to grass than animals wintered in the open.

The effect on the herbage of rotational grazing by itself and in combination with mechanical treatment and intensive manuring, especially nitrogenous manuring, is a study in itself. The work in this connection which is being carried on at the Plant Breeding Station at Aberystwyth and at the Imperial Chemical Industries Experimental Station at Jealott's Hill is of special interest.

One of the first results to be observed of intensive manuring and close grazing is the effect on the botanical composition of the sward. If heavy dressings of nitrogenous manures were applied it was found that the grasses were stimulated to the detriment of the clovers, either because the vigorously growing grass shaded out the latter or because the mineral balance of the soil was changed until it became less suited for the development of clover. If grazing was too frequent and/or too close the continual defoliation of the quicker growing grasses weakened them until the clovers, especially wild white clover, predominated and production naturally declined. It became important therefore to produce plants and to compound suitable mixtures that would both respond to intensive treatment and be persistent.

Stapledon points out that in all grass-lands there is a pronounced interplay of species which is strongly influenced by desirable as well as undesirable plants, and the management of grass-land must be influenced by this fact and attention paid to the peculiarities of each individual herbage species. It is perhaps true that this interplay is so capable of being upset by intensive methods that grass seed mixtures are tending to become more and more simple, and more attention is being paid to mixtures containing reliable grasses like indigenous leafy perennial ryegrass and wild white clover for general grazing purposes. The investigations at Aberystwyth and Jealott's Hill indicate indeed that under standard management the sward, under quite different seed mixtures, settles down to a more or less standard botanical composition. Too great emphasis cannot be laid upon the effect of management on the ultimate composition of the pasture.

Harrowing and other methods of mechanical cultivation are simply devices for imitating the treading effect of animals. Pastures which have remained uneaten and untrodden become unpalatable to stock, and it is necessary to remove this herbage and to open up and aerate the turf. This, of course, is a problem which does not occur under intensive pasture management, although surface harrowing is important after grazing in spreading the concentration of droppings and manures applied in large quantity in order that they will have their maximum effect and in order that the sward will come evenly again. Under extensive grazing methods there is a considerable amount of evidence of the efficacy of surface mechanical cultivation, although it must be admitted that no really satisfactory implement has yet been invented for this purpose.

The writer carried out an experiment in conjunction with suitable manuring on a field at Huntly Lodge some years ago. By thorough harrowing and fertilising, this field, previously considered not worth while spending money on, was improved to good average pasture in the first year (carrying a bullock per acre) and to good grazing in the second year. It was, of course, impossible to estimate how much of the improvement was due to the manure and how much to the harrowing, but plots which were left unharrowed took much longer to become good pasture, although they have ultimately been rejuvenated and improved by the treading of the stock themselves. From being worth ten shillings an acre in 1927 the field was improved in 1928 to such an extent that the liveweight production was 1½ cwts. per acre, and in 1929 over 2 cwts. per acre.

A similar test of this method carried out at Kirkhill, the farm taken over by the Hannah Dairy Research Institute in 1930, gave similarly encouraging results. Severe harrowing of old pasture in spring, fertilising and in some cases sowing fresh seeds and rolling in, may now be looked upon therefore as established practice in extensive grass-land farming.

Another method of rejuvenation which has received considerable attention by the station at Aberystwyth is that of ploughing and immediate re-seeding. This method has advantages where fields are distant from the steading, and where grain growing is not feasible or is otherwise unprofitable. The system, briefly, is to plough and apply a generous dressing of lime and other fertilisers in order to get the grass seeds which are sown along with rape to germinate and form a new sward before the ploughed down sod has time to grow up again. Successful results by this method are reported on the high-lying pastures of Wales, from the Cheshire School of Agriculture and by Captain M'Dougal at Lauder. On the Duthie Experimental Farm it has been practised for the last two years. The mixed crop of rape and young grass which is obtained about the beginning of August is found to be extremely useful at a time when the quality of the pasture even under the best of management tends to deteriorate. All stock feeders know the value of clean young grass in spring. It is equally useful in autumn, especially for lambs, which more than other animals seem to react to a change from the pastures on which they have been grazing all summer.

It has been shown that there is a definite stage in the growth of pasture when, taking yield and quality into consideration, it should be grazed. The difficulty of the farmer is so to adjust the stocking of his farm to do this satisfactorily. In order to cater for good seasons he would require to have an amount of stock above what the average season is capable of providing for. The result would be that in times of drought he would be in difficulties with regard to finding food for his extra stock. This difficulty is, of course, greatest under the most intensive management. Indeed, where extensive grazing is practised the problem is fairly satisfactorily solved by the use of the mowing machine to 'top' the grass whenever it becomes over-mature. The surplus may be left on the ground, or if there is sufficient it may be collected and made into hay for winter keep. It is unfortunate that this most useful practice is not more methodically practised. It may be remarked here that the custom of setting aside certain fields towards the end of the summer for foggage in the winter is one of doubtful value. It has been frequently stated by Stapledon, Hanley and others that the return from this rough grass does not balance (1) the extra feeding value obtained if cut and made into hay at the leafy stage, and (2) the injury which is done to the pasture in the following year or years by the formation of a mat of herbage which prevents the development of the bottom grasses so much relished by stock.

Under intensive management there may be a considerable surplus at any time during the summer, depending on the weather. There are three methods of dealing with this, the first of which is well understood practice, while the other two are still more or less in the experimental stage. Haymaking is the simplest and best known method. There are many methods of making hay, but the best is that which converts the grass into hay in the quickest possible time in order that the loss in feeding value may be as low as possible. This loss is considerable even under the best conditions. The other two methods, (1) ensiling and (2) drying, are receiving considerable attention by experimentalists and others.

Making into silage is useful in districts where climate makes hay-making difficult, and indeed it is in such districts where the surplus is liable to be greatest. It has been found possible to convert surplus grass into silage either by cutting and blowing into a tower, by stacking, or by packing into a pit. The loss by drainage and fermentation may be no greater than with a crop specially grown, and the silage is highly digestible and palatable.

At the Duthie Experimental Farm and elsewhere investigations are being carried out to determine the value of silage made according to what is known as the A.I.V. process. This process takes its name from the initials of the inventor, A. I. Virtanen of Finland. Briefly, it consists of adding acid to the green crop while it is being filled into the silo, the amount of acid added depending upon a chemical test of the state of acidity of the crop. The principle is that the acidity of the crop is immediately altered by artificial means to a level at which fermentation and therefore loss of feeding value will be at its lowest. In Finland considerable success is claimed for this method. It is stated that the loss is reduced to between 5 and 10 per cent, but practical farmers will see much difficulty and inconvenience in the system, and a considerable amount of experimental work remains to be done, not only to establish the claims made, but to devise easy and practical means of adding the acid.

The third method, that of drying, is one which offers considerable possibilities. Here the grass is cut, collected and immediately dried, ground and packed into bags, or it may be mixed with molasses or some other binding material and made into cubes or cakes. At its most leafy and nutritious stage intensively grown pasture has the composition of a protein rich concentrate, as already pointed out. When dried it has the appearance and bulk of a concentrate, and indeed it has been found that it can replace the major part of the production ration. Watson of Jealott's Hill states that the digestibility is of a higher order than that of similar grass made into silage. It has also been shown that the colour of the fat of milk from dried-grass-fed cows is richer than that of milk from cows fed similar grass made into hay, and also that the vitamin content of milk can be raised by feeding dried vitamin-rich summer grass. There can be little doubt as to the value in winter of dried grass. The problem to be solved, if production is to be undertaken on factory lines, is how to cut, collect and dry the grass at its most nutritious stage, at a cost which will allow the manufactured material to compete with the common grains and other concentrated foodstuffs. If the surplus grass from farms which are not specially organised for the purpose of producing grass to be dried is to be utilised, then methods and machines will have to be devised for cutting and collecting short leafy grass which will then either be dried by a small machine on the farm or transported to some central factory. The difficulties of organising a supply of perishable material like green grass to a factory in an uncertain climate are obvious. The mechanical difficulties will be much more easily solved.

From what has been said previously it can be seen that by the use of indigenous strains of leafy and persistent grasses, and by the intelligent use of fertilisers and by skilful management, summer grass production can be enormously increased. Not only so, but the season of growth can be earlier in spring and later in autumn. The value of these early and late ' bites ' is considerable, for they are available at times when it is most difficult to keep up production. The early ' bites ' provide ideal food for lambing ewes and a tonic for cattle becoming stale after a long winter. Considerable thought is at present being given to the use of special grasses for the production of early and late ' bites ' and for winter keep. The most promising of these is probably Italian Ryegrass. This plant does not make a good component of mixtures for summer growth as it tends to dominate others, but it is often included in order to provide winter grass. It responds well to nitrogenous manuring, and for this reason and because it competes severely with the other plants, pasture of which it is a component requires skilful management. There is a possibility that it could be used most efficiently by itself or in simple combination, as, for instance, with rape. At the Duthie Experimental Farm, where there is a considerable area of pasture, an important line of investigation is the renewal of grass when productivity begins to decline after six or seven years. Ploughing and immediate re-seeding with a mixture, as already described, is being tried. It is found, however, that the Italian Ryegrass tends to dominate the sward and instead of the new grasses establishing themselves at once, the stronger growing grass from the ploughed-down sod sometimes gets the upper hand. Last year, a heavy seeding of Italian Ryegrass along with a few pounds of rape were sown with the intention of smothering out other herbage and weeds in the first season and so allowing the renovating mixture, when sown this year, to get a better chance. This method provided an unexpectedly large amount of keep for sheep from August onwards. It has facilitated the fattening of lambs, the flushing of ewes, and provided invaluable feed for early lambing ewes. The Italian Ryegrass responds readily to, and withstands heavy dressings of nitrogenous manures. These can be applied after the ewes come off in spring, and a crop of hay taken. Italian Ryegrass hay is exceptionally well relished by cattle. There are other ways of using this grass, as, for instance, sowing along with a silage or other fodder crop or even under oats in suitable districts.

A method which offers considerable possibilities is that of Griffith and Jones, who used Italian Ryegrass as a supplement to inferior hill pasture in Wales. They seeded a small area—3 acres—adjoining a hill sheep farm with a mixture of 40 lb. Italian Ryegrass and 2 lb. wild white clover per acre. Ewe lambs which would ordinarily have been sent to low ground wintering at 7s. 6d. a head, cull lambs and ewes which would have otherwise been sold off, were allowed two hours' feed on this rich pasture daily as a supplement to the rough grazing on the hill. It was found that the sheep did well and that the carrying capacity of the special crop was about 13 head per acre throughout the winter. In the experiment 40 sheep were used, and the area was divided into three plots and grazed on the rotation system.

It is probable that this country by its soil and climate is better fitted to grow grass than any other crop. From what has been said it will be seen that the carrying capacity of pastures for summer production can be increased out of all proportion to that of which arable crops for winter feed are capable. While stock farming remains unprofitable the tendency will naturally be to exploit pasture management along these lines in order to cheapen production, for grass is probably the cheapest animal foodstuff produced on the farm. With the development of winter grass and the system of wintering cattle outdoors, the area under arable crops will become less and less. This certainly means a decline in the number of persons employed in the industry. On the other hand, if some means can be found of ensuring to stock farmers an adequate return for their products, there is not the slightest doubt but that the output of beef and mutton in this country would be increased enormously, and that this increase would mainly be through better pasture management.

CONTROL OF THE SHEEP TICK ON HILL PASTURES.

A REVIEW OF THE POSSIBILITIES, WITH SOME EXPERIMENTAL DATA.

By J. MACLEOD, B.Sc., Ph.D., the Moredun Institute, Animal Diseases Research Association, Edinburgh.

INTRODUCTION.

The sheep tick or grass tick, *Ixodes ricinus*, is familiar to the majority of sheep farmers in the hill districts of Scotland. In spring, and to a lesser extent in autumn, it is a major pest of sheep and one of the principal causes interfering with the wellbeing of hill flocks. A heavy infestation of ticks causes 'tick worry'; the sheep are restless as a result of the irritation of the tick bites, and consequently are unable to thrive. A sufficiently heavy infestation may even cause anæmia, since, in addition to the blood actually ingested by the tick, a considerable quantity is lost at the points of attachment after the ticks disengage themselves. This is especially so when many ticks are attached close to each other. Loss of wool is another consequence of a heavy infestation, as are also the formation of pustules on the skin in consequence of the biting tick having introduced or opened the way for the entrance of pus-forming bacteria. Young lambs not uncommonly suffer from extensive suppurating sores on the legs and under surface of the body as the result of tick bites.

As well as being a direct cause of losses, the tick is now known to be responsible for the transmission of the disease of sheep known as louping-ill or trembling. Further, it has recently been shown to transmit in sheep a serious febrile condition which, although now known to be distinct from louping-ill, had previously been confused with that disease. This condition is known as tick-borne fever. In addition to the injurious effects which it directly exerts upon the sheep, this disease appears to play an important part in predisposing it to infection with other diseases. There is good reason to believe that these two tick-transmitted diseases are responsible for the greater part of the spring mortality on tick-infested farms, a mortality which, in the case of non-acclimatised sheep, may remove over 50 per cent of the flock.

It is evident, therefore, that the tick problem is a serious one for sheep farmers, and that any measures which would exterminate or appreciably reduce the numbers of ticks would effect a marked reduction in the annual losses, both of life and of value, in sheep stocks. Yet no systematic attack on the tick is being made in this country. The ordinary two dippings a year have no appreciable effect, and, so far as tick control is concerned, might just as well be not carried out.

In this paper it is proposed to review the whole question of tick control, in so far as it applies to hill pastures, and to suggest the lines along which measures against the pest are most likely to be successful.

Outline of Life History of the Tick.

Any measures undertaken against the tick should be based on an intelligent appreciation of its habits. The following is a summary of the salient points in its life history, details of which will be given in the text under the discussion of different control measures.

There are, in addition to the egg stage, three stages of the tick: the larva, the nymph and the adult male or female stage. The larva, having hatched out of the egg, climbs upon a blade of grass or upon heather or bracken, and there in warm weather awaits the passing of a sheep to which it transfers itself. It buries its mouth-parts in the skin and begins to feed. It feeds steadily, without changing its position, for 3 to 5 days. Then, gorged with blood, it drops to the ground and crawls to a sheltered crevice in the damp earth among the grass roots. There, after a period of varying length, it moults to the nymph. The nymph now climbs the vegetation and attaches itself to a passing host. It requires from 4 to 6 days to engorge. When fully fed it also drops off to the ground, and after some weeks moults to the adult male or female. The adult attaches itself to a passing sheep in the same manner as the larva and nymph; the female to commence a meal lasting 7 to 11 days, the males to seek for and fertilise the females. On becoming fully engorged the female drops to the ground, and after 2 to 3 weeks begins to lay her eggs, to the number of 500 to 2000, among the grass roots. These hatch, and the larvæ climb the neighbouring grass stems to commence a new cycle.

The ticks are inactive throughout the winter, lying in chinks and crannies in the soil, under shelter of the mat of grass and roots. They appear on sheep about the beginning of March; are very numerous until June, after which month they become fairly scarce. In autumn they are again fairly numerous for a short period. The numbers on the sheep thereafter quickly decrease, until by November they have disappeared.

The tick can feed on a wide variety of hosts other than sheep, as, for example, on hares and rabbits, deer, foxes, hedgehogs, &c. The larval and nymphal stages are also found, to a less extent, on many birds such as grouse, crows and plovers.

The tick feeds on blood only, and cannot undergo a moult without preliminary engorgement; but it can live for many months without a meal. It can survive submersion for several days and is very resistant to cold spells.[1]

METHODS OF CONTROL.

Measures against any kind of pest may be referred to two main categories, the direct and the indirect. In the direct method, the attack is concentrated on some weak point in the defences of the pest—some susceptible phase of its life history. This method includes chemical measures such as spraying and dipping, and mechanical measures--trapping, starvation, burning, &c. The other main line of attack, the indirect, consists of deliberate interruption of the balance of those factors which affect the pest in Nature.

We shall consider this method first.

THE INDIRECT METHOD.

The factors influencing an organism in Nature may for our purpose be divided into two groups, the intrinsic or inherent and the extrinsic factors. The intrinsic factors controlling the survival and multiplication of a species, such as characteristics of structure and habits, are often responsible for a high mortality in the species at different times and in different stages of individual existence. Alteration of the balance of these factors, as, for example, the substitution of man-avoiding for man-attacking strains of certain malaria-carrying mosquitoes, is experimentally feasible. In this way the proportion of man-attacking strains of the particular species may be reduced. In the case of the tick this method offers no hope of practical results. Although a new race with a desired characteristic, such as preference for hosts other than the sheep, might be developed by breeding in the laboratory, the possession of this characteristic would prevent this new strain from supplanting the ordinary tick in the struggle for existence.

The extrinsic or environmental factors, on the other hand, both physical and biotic, afford greater opportunites for interference. The physical factors of the environment may be modified, as, for example, the conditions of humidity at the soil surface by flooding or draining, or the type of vegetation by cultural manipulation. The biotic environmental factors affecting a species, as, for example, its hosts, predators, parasites and infectious diseases, are in many cases successfully manipulated to control the species in question. We will consider these methods in relation to the tick.

---

[1] For a full account of the life history and field bionomics the reader is referred to an article by the writer, "The Bionomics of *Ixodes ricinus*, the sheep tick of Scotland," 'Parasitology, 1932,' Vol. xxvi., p. 382.

The Physical Environmental Factors.

It is known that the type of habitat preferred by the tick consists of swampy ill-drained hollows, with rushes and wet moss. The tick can survive actual submergence in water for periods of as long as three weeks. Flooding, even were it practicable, would not be effective as a means of control. Drying out of the soil, on the other hand, should be effective where this can be resorted to, for it has been found that a saturated or practically saturated air in the layer of vegetation over the soil is essential for survival and development of the tick. In old rough acid pastures, even in dry weather, the soil is moist and the air over it remains saturated or nearly so. In short well-grazed pasture, on the other hand, the tick does not become a pest, as the soil becomes dry and crumbly in dry summer weather and the ticks die out. The majority of hill pastures are, however, of rough grass, often ill-drained. In most cases it would be impossible, even were it desirable, to drain the land so thoroughly as to kill out the tick. Heavy grazing to keep the cover of vegetation short, and especially mixed grazing, supplemented by burning, should help to render the conditions for survival unfavourable where the pastures are of a dry nature. It is unlikely, however, that these means would materially affect the numbers of ticks on hill pastures, although they should be practicable for parkland.

Good results have been obtained in parkland by changing the degree of soil acidity. Liming and salting have proved successful in some cases in eradicating the tick. Here also, however, the method has the disadvantage of being impracticable for hill pastures.

Let us now consider the possibility of modifying in some way the biotic environment of the tick.

The Biotic Environmental Factors.

(*a*) *The Host.*—It is theoretically possible that modification of the sheep host might affect its degree of infestation by ticks. In the case of the blowfly, it has been found in Australia that by controlled breeding a type of merino sheep can be evolved which is not so readily 'struck' as the older types. With regard to the tick, however, the possibility must remain at present theoretical. (The writer has elsewhere offered evidence to suggest that the breed of sheep affects the degree of infestation.) Another factor which cannot here be considered, in the absence of experimental evidence, but which has been modified in the case of burrowing parasites attacking man, is the tissue reaction on the part of the host to insect or arachnid parasites. It appears that in certain cases it is possible to build up in the host an immunity which protects it against metazoan parasites. The remaining way in which the host relationship may be modified consists in controlling the alternative hosts for the parasite. The eradication of small mammals reduces the tick population to some extent, but as a means of control would only be useful in combination with other and more effective measures.

(*b*) *Predators.*—One of the chief biological measures now used against parasites consists in the liberation and establishment of a predator or hyperparasite which attacks the particular parasite it is desired to control. Nothing is known of the value of insects and birds in keeping down the numbers of ticks. It is possible that certain beetles and other insects are beneficial to man in this respect, but until more is known about them the balance of Nature here cannot be tampered with. The ordinary insectivorous birds do not appear to attack the tick to any great extent. The writer examined the gizzards of starlings, lapwings, larks and meadow pipits killed on tick-infested pastures during the height of the tick season. There were in the gizzards examined no recognisable parts of ticks, although the remains of many insects could be distinguished.

(*c*) *Parasites.*—No parasite of ticks has been recorded from this country. In France, Du Buysson described a chalcidid parasite of *Ixodes ricinus*, which he named *Ixodiphagus caucurtei*. In America two other parasites of ticks have been recorded by Howard: *Ixodiphagus texanus* (Howard, 1907), and *Hunterellus hookeri* (Howard, 1908) (now believed to be synonymous with *I. caucurtei*). *Ixodiphagus caucurtei* is being used in Montana to control the Rocky Mountain Spotted Fever Tick, *Dermacentor andersoni*, and promises to be fairly successful. The cost of rearing and distributing the parasite in the enormous numbers necessary to offer any hope of success is, however, prohibitive. Otherwise the method might prove of some value, since there does not appear to be any parasite of ticks already existing in Scotland.

About two thousand gorged nymphs, and numerous gorged larvæ and females, have been collected from different localities in the South and West of Scotland, and bred in the laboratory without revealing any parasites.

Summary of Indirect Methods.

It would appear from the foregoing review that the indirect methods of attack offer us little hope of successfully controlling the tick in this country. Draining, close grazing, liming and salting, although effective in the case of parkland, are impracticable for hill pastures. There is not sufficient evidence of the relation between parasitisation and breed or type of sheep. Nothing is known of the insect and bird predators of ticks, and there does not appear to be any existing tick parasites in Scotland. Control by the use of parasites could in any case only be undertaken by the State and would be extremely costly. There remains to consider the direct method of attack.

THE DIRECT METHOD.

This method consists in the use of chemical or mechanical measures against the organism itself, such as poisoning by dips or sprays, starvation by the removal of suitable hosts, or by prevention of access to the host, burning, trapping, &c. Of these, the measures applicable to ticks are dipping, starvation and burning. Spraying of the pastures is impracticable, and our knowledge of the physiology of ticks is still insufficient to permit of the intelligent application of trapping measures, the use of which depends on a knowledge of the chemical and physical stimuli to which the organism to be trapped will respond.

Chemical Methods.

Chemical methods are those chiefly used against parasites and other pests. In the form of sprays of dust or liquid or as baths, chemical parasiticides are used against parasites whether these be on or off their hosts. They may act through their toxicity for the organism on contact or after ingestion, or they may have a physical effect in that they clog the breathing apertures and so cause suffocation.

As has been indicated, the spraying of the pastures with a chemical substance for the purpose of tick control is obviously out of the question. There remain those chemical methods by which the tick may be attacked while actually on the sheep, or by which it may be prevented from infesting sheep. In this country dipping is compulsory by law and is the only method in general use, smearing or spraying of sheep being practically unknown. The chemicals principally employed in sheep dipping are arsenic and phenol (carbolic). We shall first consider the efficacy of these against ticks.

(*a*) *Arsenical Dips.*—These are generally considered to be the most efficacious in controlling ticks. It has been shown by Ransom and Graybill in America that dips containing a concentration of up to 0·24 per cent arsenic trioxide may be safely used for cattle. They found that the larvæ of the cattle tick were killed, but that the dip could not be relied upon to kill all of either the nymphal or adult female ticks. Similarly in South Africa, where dipping of cattle has been practised since Pitchford's classical serial dipping experiments in 1908, Bedford, in a report issued in 1929, was only able to state that arsenical dips (0·08 and 0·16 per cent arsenic trioxide) "can be relied upon to kill *a very large percentage* of ticks." The tick in question was the Brown Tick, *Rhipicephalus appendiculatus.*

In the case of the sheep tick, *Ixodes ricinus*, arsenical dips are not completely effective. In Russia, Olenev and Pomerantzev showed that with as high a concentration of arsenic trioxide as 0·2 per cent only 64 per cent of the attached ticks were killed in thirty-nine hours after spraying.

The following rough field-tests were made of the efficacy of arsenic as a dip against the sheep tick in this country. (1) A standard dip with a concentration of 0·15 per cent arsenic trioxide was used. The sheep were put through the dip at the rate obtaining in ordinary farm practice. The following evening the sheep on being examined were found to have some individuals of all three stages alive. The gorged ticks appeared to be more resistant than the fasting ticks. (2) A solution of a slightly greater strength than the above was made up, and sheep were given a very thorough immersion in it. The dipping was carried out at noon and the sheep examined the same night. The ticks were practically all dead, except for some nymphs about the ears where the dipping apparently had not been so thorough.

It appears, therefore, that an arsenical dip cannot be relied on to kill all the ticks, but if the dipping be carried out thoroughly the great majority are killed.

Bedford, 1929, states that arsenical dips have no deterrent effect, since the ticks are not prevented from attaching themselves to recently immersed sheep.

It is generally considered that when heavy rain occurs very soon after dipping, the value of the dipping is nullified, as the arsenic is washed out of the wool and the ticks are not killed. Watkins Pitchford, however, records a case in which 3 inches of rainfall did not appreciably lower the amount of arsenic in the coat of cattle dipped in an arsenical dip. He states that arsenic may remain in the hair of cattle for several months.

(*b*) *Phenol Dips.*—The efficacy of phenol or carbolic dips against ticks in America has been questioned, and it is often stated that arsenical dips are the more efficacious. Certain field experiments conducted by the writer would seem to suggest, however, that so far as the Scottish sheep tick is concerned there is little to choose between them.

In the following experiment a standard carbolic dip (0·35 per cent phenol) was used, made up to the required strength. Sheep were immersed for the normal time (about half a minute), and the attached ticks on examination ten minutes later were still alive. Examined two hours later many were found dying or dead, and next morning the majority were dead. Some gorged nymphs, however, were apparently unaffected, and later moulted to adults in the laboratory.

In another experiment a standard-strength solution was made, and some sheep were immersed for a full minute, some for the normal time (one-half minute), and some for less than one-half minute. Examined two and a half hours later, the majority of the ticks on those sheep which had been dipped for less than one-half minute were alive. The sheep immersed for half a minute had many dead ticks but an occasional living one, and all the ticks on those sheep immersed for a full minute were dead. In both these experiments the ticks were all alive when examined on the sheep ten minutes after dipping. In another experiment three groups of sheep were dipped in solutions of different concentrations. One group was dipped in a standard-strength solution, the second in a solution one and a half times the normal strength, and the third in a solution twice the normal strength. On examination the following day, the three groups were found to have an occasional tick surviving although the majority were dead.

It appears, therefore, that (1) it is more important to ensure a thorough immersion—*i.e.*, to prolong the period during which the sheep are in the bath, than to increase the concentration of the dip above standard strength; (2) carbolic dips appear to be reasonably efficacious against the tick, provided the sheep are not hurried too quickly through the bath.

The following experiment was carried out to test if carbolic dips have any deterrent action. Six sheep were carefully 'deticked' by hand of adult females. These sheep, along with twelve dipped sheep, were placed in a 20-acre field known to be heavily tick-infested. The following day they were examined for female ticks. The dipped sheep were found to be clean, except for one female tick which was in process of attaching itself. The six sheep deticked by hand were found to be heavily infested with females round the neck and face. On examination the following day the dipped sheep were found to be lightly infested with ticks, many of which were free or newly attached.

The above result suggests that carbolic dips have a deterrent action which lasts from twenty-four to forty-eight hours after dipping.

In an endeavour to obtain a more lasting deterrent effect a mixture was prepared of standard carbolic dip (0·35 per cent phenol) and 0·33 per cent spirits of tar. Four sheep were dipped in this mixture and four controls in a standard carbolic dip. They were then run on infested pastures. Two days later fresh ticks were found attaching themselves to both groups of sheep, so that the spirits of tar exercised no deterrent effect on tick infestation.

It must be stated that fatalities may sometimes result from the use of phenol dips. Workers in South Africa experienced heavy mortality in sheep after dipping with certain proprietary phenol dips, and were able to show that poisoning occurred as the result of absorption of phenol through the skin.[1]

(*c*) *Other Forms of Dip.*—Ransom and Graybill in America recommended crude petroleum as being very efficient against cattle ticks. This is an expensive material to use in bulk, and the difficulty of keeping and handling it makes it impracticable for general use. The same objections apply to the oily smearing substances sometimes recommended. Further, these, to be effective, must be applied very thoroughly, and the complete smearing of a sheep with a greasy substance, apart from other objections, is harmful to the animal.

In 1931 the writer carried out certain experiments [2] with a dip prepared with a mixture of Derris and soap emulsion, the results of which suggested that Derris was a very effective dip against ticks, in that it proved more successful than either arsenic (0·2 per cent As_2O_3) or phenol (0·35 per cent).

The Application of Dipping Methods.

Dipping with a suitable dip is a fairly effective means of killing the ticks actually on the host. Since, however, the tick only spends altogether some fourteen to twenty-one days on the host and passes the rest of its life on the ground, very many dippings would require to be carried out before the numbers of ticks were appreciably reduced. To effect a reduction in the tick population sufficiently marked to justify the work and expense involved, a series of dippings would have to be carried out at intervals short enough to prevent any ticks attaching, completing engorgement, and dropping off between two successive dippings. If it is desired to kill all stages of the tick, such a serial dipping would require to have intervals of no more than three days, unless a dip with a tick-deterrent action were evolved, in which case the interval could be lengthened by a period equivalent to the duration of the deterrent effect. It is generally believed that sheep suffer ill effects from repeated dippings, especially in an arsenic dip. This, however, does not appear to be the case. Stockman records having dipped sheep in an arsenic dip at five-day intervals for a month without having produced appreciable ill effects. The writer dipped forty third-class hoggs in an arsenical bath every three days on six successive occasions without producing any appreciable ill effects.

---

[1] Steyn, D. G., 1929. A note on the symptomatology of phenol poisoning in sheep induced by certain dips. Fifteenth Ann. Rep. Dir. Vet. Ser. S. Africa, Section V.

[2] MacLeod, J., 1933. A note on the use of Derris against the sheep tick. 'Scottish Jour. Agric.,' Vol. xvi., No. 1, p. 84.

By such serial dippings, carried on over a number of seasons, the numbers of ticks would eventually be reduced to a negligible total. The practical difficulties, however, are that only a proportion of the sheep, the hoggs and eild sheep, could be used for dipping during the spring tick season, since this coincides with the lambing season. A number of ticks would continue to escape each year by having fed on non-dipped sheep, and their final eradication would take very many years. Another difficulty is presented by the shortness of the interval of three days between the dippings. However, if the attack were confined to the adult females, the potential mothers of thousands of larvæ, the interval could be extended to seven days. A seven-day serial dipping would achieve the same end result ultimately, but might require to be carried out over a greater number of seasons that a three-day serial dipping.

For a serial dipping of this type it is necessary that the solution in the tank be emptied out and renewed after about every third dipping. Also, care should be taken to maintain the strength of the solution by keeping out rain, or alternatively by noting the level of the bath at the end of each dipping and the beginning of the next, and then adding sufficient dip or water to compensate for the dilution by rain or concentration by evaporation. As has already been said, it is most important also that the sheep should be in the bath for at least one-half minute if the full effect of the dip is to be obtained.

Mechanical Methods.

Under this heading are classed such direct control measures as trapping of the pest, burning of its habitat, or removal of its plant or animal host. In the case of the tick, trapping by the use of live trap animals has already been discussed under the heading of serial dipping. Stockman suggested a trap method for gorged ticks by bustling sheep round in a pen every few days, the sweepings to be destroyed periodically. The method is, of course, impracticable for hill farms.

(*a*) *Burning.*—Burning, if carried out in spring when many unfed ticks are up on the grass blades, effects the destruction of a large number of ticks. In our climate, however, the old grass is never sufficiently dry in spring to make burning really thorough. The fire runs along the top of the grass, leaving behind a pattern of partially burnt and unburnt patches, and burning is always found to have been superficial, never getting really down to the roots of the grass.

Laws records an experiment in South Africa in eradication of cattle ticks by burning. A large area of ground was thoroughly burned. A solid fence was then erected 30 feet inside the edge of the burned plot to prevent ingress of ticks. Two lots of clean cattle were driven on to the plot respectively forty-nine and fifty-two days later, and were examined upon the third and fourth days. They were found to be heavily infested with ticks.

Burning alone, therefore, is not a reliable method for control of the tick.

(*b*) *Starvation of the Tick.*—The remaining method consists in mechanical prevention of access to the host. In the case of ticks this is affected by removal of the stock from the pastures in question—*i.e.*, starving out of the tick. The tick is known to be capable of living for very long periods without a meal, and in the laboratory has been found to survive for two years or longer. The following experiment afforded a test of the value of the starvation method in control. A badly infested area of pasture, consisting of a strip of ground 45 yards broad enclosing a central plot, was fenced off in May 1929. The containing fence was game-proof, with a mesh of 1½ inches. No stock was allowed in this area, and the investigators on entering and leaving were required to wash their rubber boots in a solution of dip kept just inside the fence. The central area was used to test the value of combined methods, and will be discussed later. The surrounding 45-yard strip comprised the test area for the starvation method. Hares are known to have occasionally obtained entry, but otherwise the only possible hosts on this area were birds and such small mammals as mice and voles.

In September 1930, that is sixteen months after the area was fenced, a blanket was dragged over the herbage in the enclosure, and by this method numerous ticks of all stages were recovered. It is extremely unlikely that they survived (in such numbers) by feeding on small mammals and birds. Actually, they appeared to be more numerous than on the rest of the farm. The probable explanation of this is as follows. During an attempt at starving out the tick from a piece of ground, there comes a time, before they begin to die, when all the ticks on that ground are in the active phase. That is, the gorged ticks have moulted, while the hungry ticks have not become gorged and are still active. Therefore, although the total numbers have not increased, the ticks are all on the grass blades awaiting hosts, none being in the soil undergoing a moult or egg-laying. For this reason, if starvation be undertaken, it requires to be continued until the ticks begin to die or become too weak to bite. Otherwise the farmer will find, on putting his stock on the ground which he has kept fenced off, that they become more heavily infested than ever.

The test enclosure was again examined in May 1931—*i.e.*, twenty-four months after fencing, and an occasional tick was found. The recovered ticks appeared to be quite vigorous, and were probably individuals which had moulted from ticks gorged on birds or small vermin.

Combinations of Different Methods.

It would appear, from the foregoing review, that no single method is completely adequate to ensure eradication. The starvation method, although probably the most perfect of the above methods, is not completely effective because of the fact that a number of gorged ticks are dropped on the pastures by birds or small wild mammals. As a practical measure it is almost out of the question, since it involves removing all stock from the pastures from March to November for at least two successive years. There remains the possibility of evolving a feasible scheme of control by combining different methods.

(*a*) *Starvation and Burning.*—If pastures were temporarily abandoned by stock, two results would accrue: (1) the herbage, not being grazed, would become more luxuriant; and (2) most of the ticks would reach the unfed active state. If such conditions could be brought about, burning might be expected to have a more drastic effect on the tick population than normally, since there would be a heavier layer of dry withered grass in spring, which would burn more fiercely. Further, there would be very few ticks in the gorged state which is not affected by burning of the grass, since the gorged tick secretes itself in the crevices of the soil.

A strip of infested pasture, 270 by 45 yards, was fenced off from stock in the spring. In the following spring it was burned. There was a thick mat of dry withered grass and bent on the area, since it had not been grazed for a year, consequently it burned very thoroughly. In September, four months after burning, the area was examined by the blanket method, and active male and female ticks were recovered. It appears, therefore, that even with combined starvation and burning methods, all the ticks are not killed.

(*b*) *Starvation and Dipping.*—In the following experiment the central area of infested pasture previously referred to was used. The plots were laid down and the work of deticking them initiated by Mr W. A. Pool, then Director of the Moredun Institute, in connection with a proposed experiment in louping-ill.

A 10-acre area of tick-infested pasture was fenced off, and outside of this a neutral area 45 yards broad was left. The whole was surrounded by a game-proof fence with 1½-inch mesh. The central plot was fenced off in May 1929, and sheep, after dipping, were placed on it. While on the central area they were dipped every five days in an arsenic dip. They were removed in June and the plot left vacant. In September of the same year the writer undertook the task of deticking the area. Forty-two hoggs, newly dipped, were again placed on it. They were carried over the neutral area in a specially constructed box, to prevent contamination of this area with engorged ticks. While on the plot they were dipped every three days in an arsenical bath. After six dippings they were removed. In September of the following year twenty-six hoggs were grazed on the plot and dipped every three days for five successive dippings. A fair number of ticks were found infesting the sheep for the first part of this period. When the sheep were no longer found to pick up ticks they were removed and the plot left vacant for a year and a half. Finally, three years after the area was first fenced off, it was tested for the presence of ticks. A number of sheep were carried on to the plot in April, and they were examined periodically for the next two months. A few ticks of all stages were regularly found on them.

Since the plot had been fenced off for three years, the ticks originally on the area could not have survived in the unfed state. The broad neutral area prevented ticks crawling in from the outside. The ticks found on the sheep, therefore, must have represented the tick population kept alive by birds and ground vermin.

SUMMARY OF CONTROL METHODS.

It appears that ticks cannot be entirely eliminated from infested pastures by any recognised process, since a certain population is supported by birds and vermin. The number of ticks can, however, be very considerably reduced by either of two methods, starvation or serial dipping, or by a combination of both.

If serial dipping alone be used it could be confined to the tick seasons of spring and autumn. There are always, however, occasional ticks appearing on sheep at other times of the year. This, and the fact that in the spring season the mothers with lamb could not be dipped, would necessitate the continuance of serial dippings over a great number of years.

The combination of the serial dipping and starvation methods removes certain disadvantages incidental to the use of either method alone, and would appear to be the most practical means which offers a fair hope of comparative success. The method of alternate removal of stock and intensive grazing has the following advantages. (1) Starving of the ticks ensures that when the sheep are put on the ground they will pick up the maximum numbers. (2) The part of the farm being deticked is not entirely lost for grazing, as it would be were starvation alone resorted to; in spring and in autumn, the seasons for tick activity, this land is intensively grazed. (3) This intensive stocking has the advantage that it reduces the natural cover for the remaining ticks, rendering them more liable to death from climatic causes.

If the combined method were used, the scheme of operation would be broadly as follows. Natural boundaries and general economic considerations will decide whether a half, a third, or a fourth of the farm is to be deticked at a time. The area to be deticked is fenced off and the sheep removed from it. In April or early May the eild ewes, gimmers and hoggs are dipped and put on this area. They are dipped periodically while there, and after a number of dippings are removed. The duration of their stay will be determined by the intensity of stocking, the condition of the ground and by the effect of the successive dippings on the sheep. In September the ground is again heavily stocked for a short period and serial dippings carried out. Towards the end of November the area can be thrown open to the stock for the winter months, when the ticks are inactive. The stock is removed in March, and in May serial dippings are again carried out. Two years of this treatment should materially affect the tick population of the area, and deticking of the next section may be commenced the following year. Since the area being deticked is grazed during the winter, and for a period in the spring and autumn, the stock of the farm need not be reduced in proportion to the reduction of the ordinary grazing area. As an extra measure, those sheep not undergoing serial dippings in the autumn might be dipped whenever possible. This would expedite the desired reduction in the numbers of the tick.

ACKNOWLEDGEMENTS.

Thanks are due to Coopers' Technical Bureau for kindly supplying the arsenic dip used in deticking the experimental plot, and to Robert Young & Co. who supplied the carbolic dip and the combined carbolic and spirits of tar dip. The dipping experiments were carried out by courtesy of Mr A. Linton, of Gilmanscleuch, who provided the sheep and the facilities for dipping and took a keen personal interest in the work.

In conclusion, I should like to express my gratitude to Dr. J. Russell Greig, Director of the Institute, for his sympathetic direction and encouragement.

THE USE OF CHLORATES IN WEED CONTROL.

By D. CLOUSTON, M.A., B.Sc., and A. HILL, B.Sc., B.Sc.(Agr.),
North of Scotland College of Agriculture.

AVOIDABLE losses of great magnitude are occasioned each year by weeds. As a result of age-long selection, weeds are better adapted to their respective environments than crop plants, which, to a considerable extent, are alien to the areas on which they grow. Unless the balance is constantly thrown against them by tillage operations, weeds gain the ascendancy. They cannot be exterminated altogether, but their numbers should be maintained at a minimum. Ordinary tillage operations incidental to cropping prove totally inadequate for the control of certain weeds. In former times bare fallowing was commonly resorted to, in order to rid land of such persistent weeds. It is still practised, but is very costly, especially when to the cost of cleaning operations is added the loss of a crop. Root crops offer an opportunity of extended intercultivation throughout the growing season, and are therefore valuable in repressing weeds. Smother crops are also useful in this respect. The potato crop combines the advantages of both these methods and is unsurpassed as a means of clearing land of weeds. It is not always expedient to employ any of the foregoing methods of control. Fouling crops may be dictated because of market considerations, or cleaning operations may be curtailed through bad weather.

In recent years, therefore, resort has been had to chemicals in the suppression of weeds, where orthodox cultural methods were not practicable. Copper sulphate, iron sulphate, kainit, calcium cyanamide and sulphuric acid have been used with success, particularly against annual weeds of corn crops. The efficacy of the herbicide depends on the fact that it adheres more readily to the rough broad leaves of the weed than to the smooth narrow leaves of the cereal. The latter may suffer initial check but they soon make recovery. The utilisation of selective weed-killers in corn crops has been attended with marked success, but heretofore no chemical has been available to render similiar service against perennial weeds such as coltsfoot, couch, &c., without interfering seriously with the continuity of cropping. The experiments herein described were especially designed with the object of discovering to what extent certain chlorates would meet this requirement. The scope of the experiment, however, was widened so as to include certain of the more important annual weeds.

The chief chlorates on the British market are those of sodium and potassium. They are obtainable either as powder or as crystals. When the weed-killer is broadcast, it is imperative that the powder be used, but even for applying as a solution it is preferable, since it dissolves so much more rapidly than does the crystalline form. Chlorates are marketed in 1 cwt. drums. The lid is generally screwed down, and the insertion of a rubber washer between the drum and its lid ensures that the container is airtight. This is a matter of considerable importance, since exposure to the atmosphere impairs the quality of the chemical.

Against chlorates it must be emphasised that there is a very definite risk of fire, if they are not handled with care. When admixed with finely divided organic matter (such as may be present in dust) or with sulphur, there is a risk of spontaneous ignition. The metal containers should on no account be dropped. It is almost impossible to spray weeds without wetting the clothing with the solution. Unless clothes so damped are washed immediately, before they dry, there is a serious risk of fire. Friction alone is sufficient to ignite such clothing once it has dried. It is advisable to wear rubber boots and raincoat during spraying operations, and the garments should be washed before the chemical becomes dry. It is possible to reduce the fire hazard of chlorates by the addition to them of certain inert substances; the efficacy of the chlorate is, however, diminished thereby.

Chlorates are generally represented as being non-poisonous. In these experiments animals have grazed in fields during and after spraying with chlorate, without harm. There is reason to believe that if animals are given access to the dry salt, they may eat sufficient to do themselves harm. Pails used during spraying operations should be washed before being used in connection with animals. A case of a horse being given water in a pail in which chlorates had been dissolved was reported to us; the urinary system of the horse was upset for several days. Compared with many other weed-killers, such as arsenic preparations, chlorates are practically innocuous.

Both sodium and potassium chlorates were used in the earlier trials. Early supplies were obtained in wooden barrels. The potassium salt especially tended to harden, and was much less soluble than the sodium salt. It was also rather more expensive, and since there appeared to be no difference in the potency of the salts, only sodium chlorate was used in later trials. Both on grounds of economy and efficacy, it was preferable to apply the chlorate in solution. It is difficult to effect uniform distribution of the powder, and a greater amount of the chemical per acre is required to give equivalent results. The dry method of application is dependent for its success on a subsequent shower of rain. For widely scattered weeds in pasture the dry method may commend itself. Concentrations from 15 per cent downwards have been employed in the case of sodium chlorate. Potassium chlorate on the other hand is not so readily soluble, and a 2½ per cent solution was generally used. The amount of water does not appear to be an all-important factor provided that there is sufficient water to wet the foliage of growing weeds, or in the case of dormant perennials sufficient water to carry the chlorate to the underground organs. Experimenting with thistles on pasture, better results were obtained from spraying the foliage than from applications to the base of the stem. It was found easier to kill thistles in stubble than in pasture; in general, the less vegetation surrounding the weeds treated the more successful the treatment. It was found to be a decided advantage, in the case of weeds with strong underground organs, if the land were ploughed prior to spraying.

Time to Apply.

Annuals and biennials can be treated at any time of the year, but where the land requiring treatment is to be cropped it is well to have as long a period as possible intervening between the time of application of the chlorate and subsequent utilisation of the land for crops. Chlorates will not kill weed seeds. For perennials, distinctly better results have been obtained when the chlorate was applied in September or October than when applied earlier or later. Moreover, since heavy dressings are required for weeds with well-developed underground stems or roots, a proportionately longer time is required for the land to be freed of residual effects of the chlorate. The time taken for the chlorate to decompose depends on the season. Heavy dressings made about mid-December were found to cause considerable damage to turnips sown on 21st May. The braird was decidedly thinner and the leaves pale. September dressings of equal amount, in another experiment, were effective against the weed treated and were in no wise harmful to the subsequent turnip crop. Potatoes and cereals are much more tolerant of the residual effect of chlorate.

It will be observed from the table that the lethal dose of chlorate varies within rather wide limits, depending on the type of weed. Early experiments were designed to afford only a rough guidance as to the amount of chlorate necessary for extermination of each species. Further trials were conducted for each weed at as many centres as possible in order to find the lowest effective dressing. All figures quoted in the table relate to the ‘wet’ method of application. In most cases the chlorate was applied as a 5 per cent solution by means of a watering-can with rose attachment. The figures refer in almost all cases to experiments carried out on Aberdeenshire soils—in these experiments the soils varied from light to heavy loam.

TABLE.

Species.	Sodium chlorate. Lbs. per acre. Minimum effective dressing.	Remarks.
COMMON CHICKWEED. *Stellaria media.* L.	15	Action somewhat slow but ultimately successful.
SPEEDWELLS. *Veronica spp.*	20	—
CRESS. *Lepidium spp.*	20	—
GROUNDSEL. *Senecio vulgaris.* L.	30	Action slow but ultimately successful.
WILLOWHERBS. *Epilobium spp.*	50	—
CREEPING BUTTERCUP. *Ranunculus repens.* L.	50	Not subject to special experiment but occurred in some plots.
KNOTGRASS. *Polygonum aviculare.* L.	100	—
COMFREY. *Symphytum officinale.* L.	110	—
COLTSFOOT. *Tussilago farfara.* L.	150	100 lb. kills greater part of coltsfoot.
COUCH. *Agropyron repens.* Beauv.	150–200	Amount of chlorate required varied rather widely at different centres.
COMMON NETTLE. *Urtica dioica.* L.	150	—
CHERVIL. *Anthriscus cerefolium.* Hoffm.	150	—
CREEPING THISTLE. *Cirsium arvense.* Scop. *In pasture.*	250–350	Dressing required depends on type of soil, size of plants and amount of grass.
Land ploughed prior to application.	200	Note much reduced dressing required after ploughing.

Species.	Sodium chlorate. Lbs. per acre. Minimum effective dressing.	Remarks.
LESSER CELANDINE *Ranunculus Ficaria*	270	—
SHEEP'S SORREL. *Rumex acetosella.* L.	400	Very resistant. Apply 200 lb. per acre, then 2nd and 3rd dressings of 100 lb. each at monthly intervals.
DOCKS. *Rumex spp.*	400	do.
BISHOP'S WEED. *Ægopodium podagraria.* L.	500	Very resistant. Even this very high dressing did not entirely kill out the weed.

Where there is an admixture of weeds it is probably wise to make a light preliminary application to thin out the vegetation in order that the chlorate can afterwards be concentrated on the areas bearing the more resistant weeds. The trials on comfrey were probably the most spectacular of the series. The experiments were conducted on two separate fields. Preliminary trials were carried out on a six-acre field which the comfrey had so completely fouled that the proprietor, a nurseryman, had given up the idea of cropping altogether. The results were so promising that about an acre of the field was given up to experimentation the following year. The owner was so impressed with the preliminary results that he embarked on a spraying programme for the remaining five acres without awaiting the fuller results. Both sodium and potassium chlorates were used on the experimental area, on separate plots, and dressings of 110 lb. per acre of both chlorates entirely eradicated the weed. The major part of the field received 130 lb. per acre and complete control was secured. The applications were made in November and the field was planted with potatoes about the beginning of April. The chlorate was applied at a date which in the light of later experience was too late; notwithstanding this, however, the potatoes were unaffected by any residual effects from the chlorate. A more comprehensive account of these experiments appears elsewhere.[1]

---

[1] See Reference—page 135.

DISCUSSION OF RESULTS.

The potency of both sodium and potassium chlorate against weeds has been clearly demonstrated. Chlorates disappear from the soil in a reasonably short time, and, provided that application is made in September or October, decomposition of the salt takes place during the dormant period, so that there need be no interference with the continuity of cropping. This represents a great advance on eradication by arsenical weed-killers, the effect of which lingers in the soil for a much longer period, not to mention much greater danger of poisoning. It appears that price alone will determine the future rôle of chlorates in weed control. When the experiments were commenced the price of sodium and potassium chlorates was 30s. and 33s. per cwt. respectively. The price is now in the neighbourhood of 40s. per cwt. for both chlorates. Autumn applications have proved to be distinctly superior to those made in spring or summer, both on grounds of efficacy and expediency. Chlorates are much more effective applied as a solution than in the dry form, and the amount required per acre to kill any given weed is considerably less. They can be used to free weed-dumps, in market gardens and on farms, of noxious weeds which prevent the utilisation of large quantities of soil. Because of their relatively harmless nature when applied in solution they present a ready means of ridding edges of fields and other inaccessible places of weeds. On the Continent and in America extensive use has been made of chlorates by railway companies in the control of weeds along permanent ways. The London Midland and Scottish Railway Company has recently been experimenting with this method of weed control along the track. Municipal authorities will probably also find chlorates of value in suppressing weeds on sand and cinder paths. Chlorate provides a simple yet effective means of removing weed herbage from areas intended for lawns. If the treatment is made in autumn, the seeds can be sown without risk the following spring. The seeds of the weeds, of course, will not have been killed, but removal of the resultant weed seedlings is an easy matter if this is done before they grow too large.

A potato sprayer, temporarily converted to give a coarse and downward spray, provides a satisfactory means of application. For small areas an ordinary watering-can with rose attachment is suitable. An application of 1½-2 cwt. per acre (in solution) is a good general dressing. For convenience of application it may be stated that 1 lb. of sodium chlorate dissolved in 2 galls. of water constitutes a 5 per cent solution. If this amount of solution is applied to 24 square yards a dressing of about 200 lb. per acre will have been given. Lesser or greater applications can readily be calculated from these figures. For example, if it is desired to apply 100 lb. per acre, only ½ lb. of chlorate will be dissolved in each 2 galls. of water and applied to 24 square yards. Risk to animals grazing in fields where weeds have been sprayed is negligible. At the same time, if it is convenient, it is better to remove them until the herbage has been washed by rain.

There is a very definite fire risk with chlorates: calcium chlorate is less subject to fire risk than the sodium or potassium salts, but was not readily obtainable when required for these trials. It is not, therefore, possible to give first-hand facts relating to its potency as a weed-killer. With the exercise of reasonable care, no trouble need be experienced in using chlorates. Having apprised an intelligent worker of the precautions required in handling these substances, it is wise to vest control of spraying operations in him, in order to avoid mistakes by the uninitiated.

SUMMARY.

1. The value of sodium and potassium chlorates as weed-killers has been demonstrated for a number of annual and perennial weeds.

2. Application in the form of a solution is most effective. The amount of water is not a matter of great importance provided uniform distribution is secured. A 5 per cent solution (5 lb. to 10 galls. water) is a convenient strength for sodium chlorate and half that concentration for potassium chlorate.

3. There is a definite fire hazard in the use of chlorates. Instructions as to handling are given, and if these are followed no trouble need be experienced.

4. For perennials, autumn (September and October) applications give decidedly better results than those made in spring or summer.

5. The efficacy of the chlorates is much enhanced in the case of perennial weeds if the soil is ploughed prior to making the application.

6. The chlorates decompose during the winter, and it is possible to proceed with normal cropping in spring. If application be made too late, there is a risk of the subsequent crop suffering from residual effect of the chlorate.

7. Chlorates are generally regarded as non-poisonous. This statement should not be taken too literally, however, and drinking pails should not be put before animals, if they have contained chlorate, until they have been thoroughly washed out There is probably no danger in leaving the animals

on a pasture which has been sprayed. At the same time it is better to remove them, if possible, until rain has fallen.

8. The future rôle of chlorates in weed control must ultimately be governed by their price.

LITERATURE.

Clouston, D., and Hill, A. The Use of Chlorates as Weed Eradicators. Scot. Jour. Agr., Vol. xvi, No. 2, Apr. 1933.

Deem, J. W. Control of Ragwort and other weeds by Spraying. N.Z. Jour. Agr., Vol. xl, No. 5, May 1930, pp. 291-294.

Deem, J. W. Control of Weeds with chlorates. N.Z. Jour. Agr., Vol. xliii, No. 2, Aug. 1931, pp. 105-111.

Hill, Alfred. Trials of Weed-killers on Garden Paths. Scot. Jour. Agr., Vol. xi, No. 2, April 1928.

Latshaw, W. L., and Zahnley, J. W. Killing Bindweed with Sodium Chlorate. Kansas State Agr. College, Circ. 136, March 1928.

Magee, C. R., and Dougherty, W. H. Mich. State Coll. Agr. Exper. Stn., Quar. Bull., Vol. xii, Feb. 1930.

Mercer, S. P. Creeping Thistles. Jour. Min. of Agr., N. I., Vol. iii, 1931, pp. 142.

Neller, J. R. Effects of chlorates upon the Catalase activity of the roots of Bindweed. Jour. Agr. Res., Vol. 43, No. 2, July 1931, pp. 183-189.

Offord, H. R., and D'Urbal, R. P. Toxic action of aqueous Sod. Chlorate. Jour. Agr. Res., Vol. 43, No. 9, Nov. 1931, pp. 791-809.

Schafer, E. G., Leo, O. C., and Neller, J. R. Eradication of Bindweed with Sodium Chlorate. State Coll. of Wash. Agr. Exper. Stn., Bull. 235, June 1929, pp. 12.

Young, T., and Heddle, R. G. Control of Annual Nettle amongst catch-crops sown after early potatoes. East of Scot. Coll. of Agr., Circ., pp. 2.

Peitersen, A. K., and Burdick, R. T. Perennial Peppergrass—a noxious weed in Colorado. Col. Agr. Coll., Bull. 264, Oct. 1920, pp. 10.

AGRICULTURAL RESEARCH IN SCOTLAND IN 1932.

BEING A BRIEF SUMMARY OF WORK AT THE SCOTTISH AGRICULTURAL RESEARCH STATIONS DURING THE YEAR.

Readers desiring fuller information on any of the subjects mentioned should write to the Director of the Station at which the investigation is being carried out.

INSTITUTE OF ANIMAL GENETICS.

UNIVERSITY OF EDINBURGH, WEST MAINS ROAD.

Cattle.

In the previous volume there was an account of the experiment at present being conducted at our Experimental Farm at Shothead, Balerno, dealing with the inheritance of milk yield in cattle. The progeny of the first crosses have now been born, but it will be two or three years before their lactation records will be available. Accordingly it is not possible to make any report upon this aspect of our experimental work. There are, however, one or two items which may be of interest to the members of the Highland and Agricultural Society.

For the formation of the foundation stock of Ayrshire cattle, it was decided to purchase heifers on the performance of their sire as judged by the progeny test. That is to say, the heifers were selected primarily upon the yields of their half-sisters by the same sire. Eight pedigree Ayrshire heifers, sired by "Auchendrane Prince Vernon" 25,598, were purchased. Their first lactation has now been completed. The average yield is 1084 gallons at 3·9 per cent butter fat, giving a yield of 423 lb. of butter fat. The heifers calved between 4th October 1931 and 2nd November 1931. The average length of their lactation was 55 weeks. These records show the value of selecting female stock upon the performance of the sire as judged by the progeny test.

There has been some dispute as to the quantity of milk that a pedigree Scotch Shorthorn can give. For the purpose of the experiment, 12 Shorthorn heifers of the Scotch or beef type were purchased from various herds, and may be taken to represent, as regards capacity of milk yield, an average sample of the herds of Scotland. The yield of milk given by those of the heifers who have now completed their first lactation has varied from 200 gallons up to over 600 gallons. The best record is that of a heifer calving in March 1932, which gave 607 gallons at 3·75 per cent in 258 days and calved again within a year. Two of these heifers have given sufficient milk to enable them to be entered as qualified cows in the records of the Dairy Shorthorn Breeders' Association.

Horses.

The stud of Shetland ponies is being continued. Animals have been sent for experimental purposes to the University of Cambridge, and also to the Royal (Dick) Veterinary College, where Professor Linton is studying the composition of mares' milk.

Pregnancy Diagnosis.—A service for the diagnosis of pregnancy in mares, based upon a biological test of a sample of urine, has been established, and is now in proper working order. Diagnosis before the 65th day after service cannot be undertaken with certainty, but subsequent to this date the test which has been evolved gives a very high degree of accuracy.

This work has received support from many horse-breeding societies, including the British Thoroughbred Breeders' Association, to whom we are greatly indebted for assistance and encouragement.

The operation of the service is such that owners apply for a special container for the sample from each mare, which they fill and forward to the Institute. The test takes from 6-7 days to carry out, and a report is forwarded immediately upon completion of the examination. During the past six months over 600 samples have been received from British, Colonial and foreign breeders. To anyone interested further details will be sent on application to the Section of Comparative Physiology at this Institute.

Pigs.

Our first results from the new Pig Plant at our Experimental Farm are now being obtained. One of the most striking results is the variation in the amount of food consumed by pigs of different hereditary constitution. The uneconomic or greedy pig may consume 1000 lb. of meal in order to reach bacon weight of 200 lb. on the hoof. On the other hand, a pig which has the inherited capacity to put on flesh on a small consumption of meal is able to reach the same weight on little more than half the quantity of food required by the greedy pig.

Amongst other things we are trying to select a strain of pigs which will not only give a carcase of good quality, but will also produce that carcase as economically as possible.

The figure for meal consumption per lb. of liveweight gain is calculated from the amount of food consumed by the litter of pigs from the time of weaning till bacon weight is reached. By selection we have been able to reduce the amount of food required per lb. of liveweight gain from 4 lb. of meal per lb. of liveweight gain to under 3 lb. This figure represents the average of the litter, and there is considerable variation within the litter; but it is the litters which have the lowest variation that give the best results.

That economy in laying on flesh is not inconsistent with show type may be judged from the fact that the boar which has sired the best litters comes from the famous Gogar herd, and that dams of some of the best litters are out of the famous Wall herd.

Sheep.

The research work carried out on problems relating to sheep and wool falls into three divisions. Studies of the inheritance of kemp content in Blackface wool, which have been in progress for the past three years, are now approaching completion. It has been possible to show that the presence of kemp in the fleece depends basically upon the hereditary constitution of the sheep, but the actual amount which the fleece possesses is profoundly influenced by the environment, and in particular by the character of the feeding. From this work there emerges the strong suggestion that were the sheep owner to be adequately rewarded for producing Blackface wool free from high kemp content by a differential level in the price obtained for his wool, a method of breeding could be adopted which would enable him to do so. The results of this work are to be published in the near future.

The study of the inheritance of certain deformities in sheep has progressed, and in at least one condition in which deformities of the limbs are involved we now know many of the details of the actual changes which bring about the condition. Small flocks of heterozygous ewes have been collected and maintained, against which it is possible to test whether a particular ram lamb carries or does not carry the factor for a given deformity. The relationship between the limb deformity in lambs and similar conditions (*e.g.*, ‘ club-foot ’) in human beings is now being studied.

Further evidence has been collected which shows that there is an apparent correlation between face-colour and hardiness in Blackface sheep stocks. The details of this are somewhat complicated and do not lend themselves to a brief account. They are being prepared for publication in the near future.

Studies of the physiological mechanisms of the reproductive cycles in sheep have been continued, and when completed further light will be thrown upon such problems as fertility, number of lambs produced, abortion of other than pathological origin, and the details of pregnancy.

Rabbits.

It has been alleged that certain undesirable physiological conditions are peculiarly liable to manifest themselves in the Rex rabbit. This allegation has been one of the main subjects of study during the year under review, and will continue to form an important part of the work for some time to come. The conditions of which the chief complaints have been made include a tendency to rickets, snuffles and eye malformations. It is true that many of the original rabbits of this variety suffered from one or more of these diseases. It is true also that a proportion of their offspring were similarly afflicted, but there seems no reason to doubt that by careful selective breeding from only the strongest specimens, a strain of Rexes can be produced which will be in no way inferior to other rabbits either in health or in stamina.

Associated with this study has been an investigation of the mode of inheritance of the fine and coarse coat in the Rex, and during the coming year this will be continued. It is hoped also to extend studies on this breed to include an examination of the curly coat, specimens of which have recently been procured.

The genetics of the Sable rabbit have been analysed, and it appears that the ideal type is the heterozygous form between the ‘ dark chinchilla ’ character and the albino, as the intermediate shade Sables do not breed true. The type of inheritance is comparable to that of the well-known Blue Andalusian in poultry.

Several experimental crosses are being made, and it is probable that certain of the recombinations of characters in subsequent generations will result in the production of new breeds with pelts of value for the fur trade.

The Institute has been presented with two rabbits which, strangely enough, exhibit both dominant and recessive alternative characters. In one a short-haired rabbit has several patches of long (Angora) fur, and in the second both dense (Black) and dilute (Blue) pigmentation is exhibited. These unusual cases of somatic segregation are of most exceptional interest from the scientific point of view.

ANIMAL DISEASES RESEARCH ASSOCIATION.

MOREDUN INSTITUTE, GILMERTON, EDINBURGH.

Louping-Ill.

In the report for 1931 it was shown that the virus of Louping-Ill can be transmitted by the tick, *Ixodes ricinus*, and that sheep artificially immunised to the virus can be protected against Louping-Ill when grazed on infected pastures.

An extended field trial involving controlled observations on 5756 sheep, designed to test further the protective value of the vaccine, was carried out in 1932. The results indicate that an effective measure of protection to the natural disease can be obtained by vaccination. Further trials are in progress.

Tick-Borne Fever.

This disease of sheep, which was discovered to exist concurrently with Louping-Ill, from which it can, however, be clearly distinguished on histological, immunological and clinical evidence, has been the subject of continued study, with particular reference to its etiology.

Ixodes ricinus.

Since it has now been shown that *Ixodes ricinus* is the vector of two important diseases of sheep, Louping-Ill and Tick-Borne Fever, its ecology and the means for its control have been extensively studied.

Lamb Dysentery.

Lamb Dysentery serum continues to prove of specific efficacy in the prevention of this disease, and during the past season about 52,000 doses have been issued with entirely satisfactory results.

Braxy.

Efforts have been continued to prepare an effective Braxy vaccine. The employment of vaccine prepared from formolised whole culture (anaculture) has been found to yield highly satisfactory results. During the last Braxy season 31,313 doses were issued, and a controlled field experiment involving observations on 4163 sheep was carried through. Braxy occurred in an incidence of 6·73 per cent in the control group, and was reduced to 0·64 per cent in the inoculated group.

Enzootic Abortion in Ewes.

A set of field experiments designed to test the possible association of enzootic abortion in ewes with mineral deficient diet was productive of negative results. This year similar experiments are being conducted in the field, accessory food factors being substituted for minerals.

Scrapie.

The biochemical investigation, which was instituted in 1931, is still proceeding, and findings of apparent pathological significance have been obtained.

An experiment has been set up at the Moredun Institute to determine whether the disease can be transmitted through the medium of ground infection. It is anticipated that a period of about two years will require to elapse before definite conclusions can be formed.

Grass Sickness.

The biochemical investigation of grass sickness is being continued. Over one hundred specimens of blood have been analysed. On statistical examination, the significance of the results of these analyses has been established, but, while the results furnish evidence which is of assistance in determining the nature of the disease, the cause of the affection is still quite obscure.

Sweepings from seventy infected pastures have been collected, and these have been administered to thirty-four test horses with the object of artificially producing the disease. The results have been negative.

Further efforts to transmit the disease experimentally by inoculation have also failed, and experiments designed to reproduce the symptoms by causing disfunction of the autonomic nervous system have also proved negative.

Pine.

Since the publication of the Association's Annual Report, in which reference was made to the discovery that Pine in Tiree resulted from an iron deficiency, the attention of the Institute has been drawn to numerous indeterminate conditions of debility in sheep. The majority of these appear to be due to factors other than iron deficiency, but in a proportion of cases the administration of iron has effected an immediate curative response. It remains to determine to what extent iron pine exists in this country, and the areas in which it is prevalent.

Lactation Tetany in Cows.

During the last year a large number of cases of lactation tetany has been investigated by the Biochemical Department, and it has been found that in every case a marked magnesium deficiency existed.

The disease runs a very acute course, and the mortality approaches 100 per cent.

Experiments have been conducted on test cattle for the purpose of determining the most effective means of furnishing the tissues with a rapidly assimilable form of magnesium. The treatment devised has been applied in practice in a limited number of cases with encouraging results.

Contagious Bovine Abortion.

In conjunction with the Scottish Committee on Bovine Abortion, the Association has undertaken an investigation of the disease as it is experimentally produced in small animals.

This research is designed with the ultimate object of obtaining, if possible, a safe and effective preventive vaccine.

ROWETT RESEARCH INSTITUTE.

BUCKSBURN, ABERDEEN.

Research on fundamental problems of nutrition is carried out in the Institute itself, and practical experimental work with groups of farm animals on the Duthie Stock Farm attached to the Institute.

ROWETT INSTITUTE.

One of the three main lines of investigation referred to in the previous issue of the 'Transactions' has been continued—namely, the influence of nutrition on susceptibility to disease. Work has also been in progress on (1) the nutrition of the dairy cow with a view to obtaining information as to the factors affecting the composition of milk, and (2) the physiology of digestion and absorption.

Influence of Nutrition on Susceptibility to Disease.—The work with sheep on natural hill pastures has been continued as part of the declared plan of running the experiments over a series of years. In addition, groups of sheep have been run indoors under close observation in order to obtain further information as to the effect of diet on the chemical composition of the blood and the immunological reactions of the blood serum. The complete mineral balances of certain of these sheep have been determined in order to ascertain the use made by the animals of various supplementary minerals when added to rations deficient in them. A start has been made to determine the mineral requirements of the breeding ewe at different times in the annual cycle (pregnancy, lactation, dry period), and also by balance experiments to determine the best forms in which to supply supplementary minerals where necessary.

Nutrition of the Dairy Cow.—During the last year experimental data have been accumulated with a view to establishing the normal blood picture of the cow at various stages during the lactation and dry period. This will be followed up in conjunction with a study of the composition of the milk under different systems of feeding.

Physiology of Digestion and Absorption.—Further study is being made of the relationship between the absorption of phosphates and carbohydrates. The work on digestion has been concerned chiefly with the fowl. The rate of passage of different foodstuffs along the alimentary canal has been studied by X-ray examination, and it has been found that the alimentary canal of the fowl is emptied in about twenty hours, irrespective of the nature of the food. It has been shown that the gizzard, where grinding takes place, only allows the fine material to pass through into the intestine for further digestion and absorption. Violent excitement checks the activity of the crop and the gizzard. The metabolism and absorption of carbohydrates, which form a considerable proportion of the food of the fowl, differ from that in the mammal. This point is being investigated more fully by a different technique.

Another aspect of poultry research has been concerned with the vitamin D requirements, a point probably connected with such problems as soft-shelled eggs. It is hoped, by a study of the blood picture and the structure of glandular tissues as well as by balance experiments, to obtain further information on this subject.

DUTHIE EXPERIMENTAL FARM.

In the separate departments for dairy cows, beef cattle, sheep, pigs and poultry, work has been continued to establish optimum feeding standards. Data on rate of growth and production costs under conditions of efficient feeding and management are also being accumulated.

Dairy Cows.—A test is in progress to determine the value for milking cows of silage made according to the A.I.V. process as compared with silage made in the ordinary way. Data will be obtained regarding the loss of nutrients during storage of the crop when made into silage by the two methods, and the amount and colour of the butter fat in the milk is also being determined.

Beef Cattle.—The first of the cattle used in the trial to determine the ultimate effect of reducing the milk allowance of pail-fed calves have been slaughtered. Those which get the minimum amount of milk appear to be reaching the slaughter stage as soon as those getting the maximum allowance of one hundred gallons. These tests are being continued and extended to calves reared on foster-mother cows.

Sheep.—An experiment with fifty Grey Face ewes is in progress to ascertain how far the date of weaning affects the date of coming in heat, and to see whether this type of sheep can satisfactorily be used for the production of early lamb.

Pigs.—Tests are in progress to determine the toxic level, if any, of salt to growing pigs. The experiments with cod-liver oil have been continued, and those on oat-dust have been completed with the conclusion that, at present prices, oat-dust is not a suitable food for pigs.

Poultry.—The investigation into different dates of hatching of White Leghorns has been continued, as well as that into the effect of withholding salt from an ordinary ration. Experiments are being undertaken to determine how far satisfactory rations can be compounded of home-grown foods such as oats, barley and potatoes, for which at present a satisfactory market cannot be obtained.

THE SCOTTISH PLANT-BREEDING STATION.

CRAIGS HOUSE, CORSTORPHINE.

Investigations continue to be conducted with oats, herbage plants, swedes and potatoes. It is the practice, however, in preparing this short annual report for the 'Transactions' to refer to the work with one of these crop plants in detail each year. In 1929 reference was made to the progress that had been made at the Scottish Plant-Breeding Station with the breeding of herbage plants up to that time, and, following in the usual sequence, this report again deals with herbage plants.

Since the date of the previous report steady progress has been made in the efforts to isolate varieties of timothy, perennial rye-grass and cocksfoot suited to pasture conditions. In connection with this work it has been found necessary to study the influence of environmental conditions on the hereditary composition of pasture strains. In these and other studies it has been found that within a single plant species many different regional strains have developed in different parts of the world as a result of the continual interactions and adjustments of the component types to the prevailing habitat conditions. This diversity of types is particularly evident when wild plants are experimentally studied. The evidence so far available indicates that the general principles governing the distribution of wild plants applies also, but perhaps with less force, to the agricultural crop plants. In agriculture man can so influence the environment by cultural treatment, &c., that he can frequently grow varieties beyond their natural region of distribution. But even in agriculture there are limits to the possible artificial extension of the range of particular races of crop plants, and it may be that before these limits are reached it is not economically advisable to endeavour to transform the environment to suit the plant, but rather to utilise plants inherently fitted for the existing environment.

A considerable part of the work with herbage plants during the last few years has been directed towards the critical examination of different types of timothy. As a result of these investigations two distinct types have been identified within the group of common timothy known as *Phleum pratense* L. This division is of much agricultural importance on account of the facts that each group is suited to a different environment, and that intersterility will greatly help to maintain the individual identity of each group during the process of multiplication by seed. It has also been shown that common timothy is closely related to the alpine timothy (*Phleum alpinum* L.) of our Scottish mountains.

For purposes of differentiation and classification it is essential that the two groups of common timothy should receive distinctive names, and the following have been proposed :—

(1) Diploid timothy (*P. pratense diploidium*). This is a comparatively low-growing group, and contains the 'wild' forms, many of which are suited to pasture conditions and areas of low rainfall.

(2) Hexaploid timothy (*P. pratense hexaploidium*). This group is typically represented by the forms of timothy in agricultural use at the present time. The members of the group are seldom, if ever, common in old, heavily grazed pastures.

Each of the two groups contain minor groups (ecotypes) which possess different environmental preferences, and these units are now being studied.

The study of ecotypes in grasses such as timothy suggests that each ecotype consists of a collection of cross-fertilising individuals of different heritable constitution which are capable of resisting elimination under the environmental conditions of the locality where they occur. Such races comprise those plants which can survive the effects of the habitat factors (*e.g.*, climate, grazing animals, &c.) acting upon the various types within larger groups. While there is evidence that environment may play a part in the origin of new types, the environmental conditions are not considered to bring about a gradual change in the characters of local populations.

In general, as far as the plant types are concerned, these conditions merely act as passive agents supplying a suitable environment to a population composed of suitable hereditary types. The establishment of ecotypes in the wild is primarily the result of natural selection bringing about a state of isolation. From the indications given by the experimental data at present available it appears that by the more intensive method of conscious selection of certain individual plants from an ecotype an agricultural variety of reasonable uniformity and exhibiting definite environmental preferences should ultimately be obtained by the breeder.

Several promising new pasture strains of timothy, perennial ryegrass and cocksfoot are at present being examined at the Plant-Breeding Station. These include two strains of diploid timothy, one of perennial ryegrass and one of cocksfoot, all of which have now reached the field-trial stage.

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE.

(*a*) Milk Production Department.

The work of this Department consists of investigating problems connected with the feeding and management of dairy cattle. A brief summary will be given here of some of the results obtained during the past year and of some of the problems on hand.

Hoven, or Bloat, in Dairy Cattle.—This trouble is particularly common in some sections of the Rhinns of Galloway. As a result of a survey there, a report has been published showing the conditions under which it is most likely to occur. Suggestions are also made for the prevention and control of hoven.

Pasteurised Milk for Calves.—This work is being continued on a larger scale than formerly.

The Protein Supply.—The provision of an adequate supply of protein in the ration of the dairy cow is one of the most important problems in dairy herd management. In recent trials at this Institution it has been found that an allowance of 20 per cent of digestible crude protein in the grain ration of milking cows leads to higher milk production than an allowance of 15 per cent. It was also found that increasing the digestible crude protein in the grain ration to around 22 per cent gave no greater milk yield than was obtained when the allowance was 17½ per cent. It would appear, therefore, that the digestible crude protein in the grain ration of dairy cows should be around 15 to 20 per cent—approaching the upper limit when feeds high in protein are cheap, and the lower limit when they are relatively dear.

Dried Beet Pulp.—In the past dried beet pulp has frequently been soaked before feeding to dairy cows. It has now been found that up to 6 lb. per head daily of beet pulp can be fed in the dry condition. The cows in this trial had access to water-bowls—the results might not have been the same in the absence of these.

Proven Sires.—The list of proven dairy sires prepared from the Reports of the Scottish Milk Records Association continues to grow. Bulls with up to 60 high producing daughters have been found.

(*b*) MILK UTILISATION DEPARTMENT.

The changing conditions through which the dairying industry is passing is reflected in the nature of the queries which have been addressed to this Department during the past year. By far the greater number relate to fluid milk, and more particularly to flavour defects in market milk. If laboratory examination of farm milk affords any indication of modern conditions of milk production, one might venture to say that dairymen have now less difficulty in producing milk of relatively low bacterial numbers and of satisfactory keeping qualities than milk which has a sweet attractive flavour and good manufacturing qualities. This is illustrated by the fact that in a period of three months, during which a large number of specimens of milk were submitted for examination, 72 farm (herd) samples and 62 individual cow's milk were found to have a flavour so unsatisfactory as to call forth complaints by the vendor. And yet these milks kept well—as judged by the time they took to become sour. In our experience, such unsatisfactory flavours arise principally from udder disturbances in the producing cows, but they are also occasionally due to the food factor, to the exposure of the newly drawn milk to unfavourable environmental conditions, to the inclusion in the farm supply of the milk of cows approaching the end of the lactation, or to the incidence of staw and acetonemia in one or more members of the herd. In one case a pronounced oily taste was found to be induced by a brass wire strainer through which the milk, after leaving the farm cooler, was passed.

Among the udder infections which have been observed to cause off flavours and lack of sweetness in milk, contagious mammitis stands out prominently. This disease which, introduced by an infected cow, spreads rapidly throughout the herd, is now the greatest single menace to hygienic and economic milk production, and should, in the interests of the dairy industry, be made notifiable.

Apart from problems relating to the fluid milk trade, advice was sought by producers on such subjects as: methods of preparing cultured butter-milk; crustless cheese manufacture; sterilised cream; disposal of creamery wastes; failure of cream to churn in normal time; slow-working in cheese-making; control of cheese maggots; bottling of hot pasteurised milk; taints in cheese; caramel flavour in butter; suitability and strength of alkali solutions used for bottle-washing; discoloration in cheese; strength of rennet solutions and of cheese colour (annatto), &c.

Cheese-making Problems: (a) Slow-working and Weak Body.—In recent years many cheese-makers have noticed an increasing tendency to weakness in the body of the curd during manufacture, and an unsatisfactory texture accompanied by a sharp acid flavour in the ripe cheese. The process of manufacture is invariably delayed, and modifications in the technique such as change of starter, variations in the time of ripening the cheese milk, or an increased temperature of scald, have little ameliorative influence. Relative investigations carried out by this Department have shown that the effect is not due to any specific contamination of the milk during production, nor commonly to lack of vigour in the starter culture supplied to the dairyman, but that the fault is inherent in the primary milk, even though it may appear physically normal. This alteration in the reaction of the milk is invariably due to a disturbance of the process of milk secretion (such as may be induced by mammitis and kindred diseases) in some of the producing cows, and until it has been determined which cows are affected and their milk altogether withheld from the cheese vat, no improvement in the character of the cheese can be effected even by the most skilled cheese-maker. Among the tests which have been found useful in picking out the abnormally reacting milks of individual cows are microscopic examination, the catalase test and a modified rennet test. In such milk one may observe a noticeable lowering of the calcium content, a decrease of the lactose and an increase of the chlorine: bacteriologically the presence of hæmolytic staphylococci or streptococci is of significance. Experimentally it has been found that the addition of chemicals like lime salts, suspended phosphates and bacterial activators to milk productive of slow-working, weak-bodied curds is not attended with any marked improvement in the character of the cheese.

(*b*) *Burnt Flavour in Cheese Curds.*—A persistent and objectionable burnt aroma which appeared in the cheese curds of milk drawn from a high grade herd during the summer months was found to be caused by a specific lactic acid organism, which is similar in most of its characteristics to *Str. lactis.* Systematic investigation showed that the infective organism was not derived from the water supply or from the utensils (which indeed were carefully cleaned and sterilised after use) or from any specific contamination of the milk due to laxity in methods of production. The udders and flanks of selected cows in the herd were thoroughly washed and disinfected and the foremilk rejected. Samples of the milk were then drawn under aseptic conditions into sterilised glass bottles. These samples on incubation developed the characteristic burnt or caramel odour observed in the affected cheese curds. From the incubated milk a predominating lactic acid streptococcus was isolated which could reproduce in sterile Seitz filtered milk and whey the characteristic burnt smell. A pure culture of this organism used as starter in the making of cheese from normal milk reproduced in the cheese curd the typical burnt smell. This appears to be the first recorded instance of an intra-mammary infection of a lactic acid organism productive of a caramel odour in milk and its products.

Butter-making Experiments.—An inquiry into the effect of different types of basal rations on the character of butter showed that swedes gave a much more pleasing colour than beet pulp. Whereas roots produced in butter the attractive pale straw colour and a firm waxy body, beet pulp resulted in a dead white butter, weak in body, and which after a short storage period became oxidised and tallowy.

Starters and Starter Investigations.—During the past year over 2500 pure culture starters were issued to butter-makers and cheese-makers.

The chief problem connected with starters is the maintenance of vigour, and in an effort to determine what factors are concerned in the virulence of lactic acid bacteria, the following factors were studied : (1) variations in the size and shape of colonies on the plate in relationship to vitality in milk culture, (2) the response of raw and of pasteurised milk to the activity of the starter organisms, (3) effect on the vigour of lactic acid bacteria of the bacterial free serum of selected raw milk. No definite relationship between size and shape of colony in relation to vigour of cultures developed from them was established. As a general rule, pure cultures of lactic acid bacteria grow better in sterilised than in pasteurised milk or in fresh raw milk, but the rate of acid formation is apt to decline when they are consistently grown in sterilised milk. The bacterial free serum of raw milk did not result in more active cultures than when pasteurised or sterilised milk was used.

The factor which was found to exert the greatest influence on starter-making is the type of milk used for inoculation purposes—irrespective of the degree of heat to which it has been subjected in the pasteurising process. Some types of milk were found to have a debilitating effect on the vigour of starter cultures.

THE HANNAH DAIRY RESEARCH INSTITUTE.

KIRKHILL, AYR.

Nutrition.—Investigations are in progress which are designed to determine the influence of the *quality* as distinct from the *quantity* of protein in the rations of milking cows. The first series of experiments, carried out during the past year, have demonstrated that, apart from the amount of protein fed, the composition of the protein may materially alter its value for milk production. A second series of experiments is at present being undertaken with the object of confirming the previous year's conclusions.

Milk Secretion.—Previous work on this subject has been confirmed and extended. It has been definitely established that the protein of milk is, in part at least, derived from the free amino-acids of the blood, and the disappearance of sugar from the blood traversing the mammary gland has also been demonstrated. Work is continuing on the possible mode of synthesis of milk constituents, with particular reference to the phosphorus compounds of the blood.

Inheritance of Milk Yield.—A thorough investigation has been made of the genetic construction of the Ayrshire breed of cattle, with special reference to the degree of inbreeding. A paper has been published showing the coefficients of inbreeding of the breed since the inauguration of the Herd-Book, and also of certain groups (such as high milk yielders *versus* average milk yielders) within the breed.

Tuberculosis in Dairy Cows.—The experimental eradication scheme commenced in 1929 has been brought to a conclusion after three years' testing. The results show that twenty out of the twenty-eight co-operating herds are now free from the disease, while the reduction in the number of reactors in the remaining herds has been reduced from an average of 52 per cent to an average of 24 per cent. In two other herds included in the scheme, in which no precautions were taken to limit infection, the proportion of reactors has increased from 42 per cent to 58 per cent. As stated in previous reports, the only incentive given to owners of herds under this scheme was the provision of free tuberculin testing and free advice on isolation methods, and the progress noted above, after only three years' work, must be regarded as extremely encouraging. This work has been made possible through the provision of a grant from the Medical Research Council.

In the meantime, the co-operative investigation into the tuberculous infection of the milk supply, referred to in the last report, has been completed and will shortly be published.

Calf Diseases.—A survey has been made in a group of typical Ayrshire farms of the losses in calves caused by disease. The results show that disease constitutes a serious source of loss to breeders, as many as 20 per cent of calves succumbing to disease within about four weeks from birth. The chief diseases responsible are white scour and navel or joint ill.

Byre Construction and Equipment.—Experiments are continually in progress to ascertain the value of different types of byre equipment and of different methods of byre construction. A new type of flooring has been devised, and the design of water-bowls has been investigated. Further work, on similar lines, is at present in progress.

Condensing and Drying of Milk.—Factors affecting the occurrence of heat coagulation in evaporated milk and of insolubility in milk powders are under investigation. Laboratory experiments have been made into the relation of temperature and time of heating to solubility, and the important influence of the degree of evaporation in influencing the rate of production of insolubility has been demonstrated. Attempts are being made to apply the results to commercial drying plants.

Surveys of Literature.—Ever since the establishment of the Institute, particular attention has been paid to the need for collecting and correlating the mass of published literature relating to various aspects of dairying processes. So far, three bulletins have been issued: one dealing with the chemical and bacteriological aspects of the condensing and drying of milk; one with the engineering aspects of the same processes; and one with the relative nutritional properties of raw and pasteurised milk. Such surveys of literature are not only of value to research workers engaged in allied problems, but they indicate the more important problems awaiting solution, and thus provide both motive and direction for future research.

MACAULAY INSTITUTE FOR SOIL RESEARCH.

CRAIGIEBUCKLER, ABERDEEN.

Development of the Institute.—A certain amount of progress was made during the year with the alterations and equipment of laboratories at Craigiebuckler, but the work has been delayed by the present financial conditions. Additional research scholars have been enrolled, and as the shortage of accommodation is acute, an attempt is being made to raise locally part of the funds necessary for extension. It had been hoped to extend the pot-culture work, which is useful for advisory purposes, but this has had to be postponed.

Soil Testing and Advisory Work.—Most of the advisory inquiries received were on questions of liming, but a considerable number of farmers asked for advice regarding manuring and draining. On the *drainage* side, experiments have been carried out in the south-west of Scotland with field drainage machines, with a view to improving the cutting-irons and the throw-off of the cut material. Various questions connected with mole draining have been studied. The advisory work on *liming* is based on the recognised methods for testing pH, lime requirement, exchangeable calcium, &c., and in most cases it is possible to give satisfactory advice on whether or not lime should be applied. The question of amount, however, in some cases offers considerable difficulties, and a series of experiments has been laid out on different soil types in order to obtain further information on this question. In testing *manurial requirements* there is sometimes difficulty in translating the results of chemical determinations into hundredweights per acre of fertilisers, and probably the most satisfactory test in the present state of our knowledge is that designed by Mitscherlich, in which plants are grown in pots. The difficulty about this test is the initial cost of equipment, which amounts to about £5 for a single soil. The method, however, is one that appeals to farmers, as they can actually see the differences due to different manurial treatments, and an extension of this type of work is highly desirable. A few soils have been examined at the Institute by this method during the year. In addition to the pot-work, many samples have been examined for manurial requirement by chemical tests; comparison with the results obtained in selected soils by the Mitscherlich method is proving of great value in the interpretation of these tests. At a nominal cost farmers can obtain information regarding the 'lime requirement' and 'available' potash and phosphate in their soils, and many are taking advantage of these facilities to guide them regarding liming and manuring.

Special Investigations.—A number of special investigations were undertaken during the year, dealing with such subjects as:—

The effect of different phosphatic manures on various soil types.
The uses of horn manure.
The treatment of lawns.
The lime status of certain soils in the north-east of Scotland.
The texture and colour of soils.

Experiments were also carried out, in co-operation with the Rowett Institute, to observe the behaviour of certain ions in limed and unlimed soils, and the preparation of silage by the new A.I.V. process is being studied (also in co-operation with the Rowett Institute).

Investigations into the problems connected with the malnutrition of mountain sheep, which, in conjunction with the Scottish Animal Diseases Research Association, were commenced last year, were continued during the present period. It has been shown that the soils from the area where disease is present contain an abnormally large amount of lime, and it is possible that the 'pining' condition, although not due to lime, may be associated with a high content of lime in the soil.

Macaulay Demonstration Farm.—Satisfactory progress has been made with the farm in Lewis. The area under crop has been considerably increased and improvements made on the drainage. Experiments to ascertain the best depth and distance apart of the drains are in progress. A section of road has been made through deep peat in accordance with a system which has been found successful in Germany.

The field experiments on the use of various artificial manures with and without lime have been continued, and a range of plots of grasses and legumes (with and without inoculation) have been laid down.

The principal crops grown this year were grass for pasture, hay and silage. A marked improvement was effected in the vegetable garden, and it is evident that with suitable treatment a whole range of vegetables can be grown successfully on deep peat.

The number of cows has been increased, and over 20 gallons of milk from tuberculin-tested cows are now being sold daily in Stornoway. The poultry-work at the farm has also been considerably developed, and the total receipts for milk and eggs for 1932 amounted to over £1000.

An area of peat land in the north of Lewis has been surveyed to ascertain the possibilities of its improvement for agricultural purposes. An attempt is also being made to study the development of peat mosses under the climatic conditions prevailing in Lewis.

Soil Surveys and Geological Work.—Soil surveys are being carried out in four areas of Scotland, viz. :—

1. The neighbourhood of Aberdeen.
2. The neighbourhood of Insch.
3. The Howwood Valley in Renfrewshire.
4. Sand dune soils in Ayrshire.

Determinations of the mineral content of soils of the north-east of Scotland have been continued. Study is being made of the parent material, and this study is being linked up with the soil survey work. A special study is also being made of the content and state of weathering of minerals furnishing plant nutrients in a selected number of soils. A progress report has been published in connection with the compilation of information on drift and peat recorded by the Geological Survey in two maps and memoirs. All the information relating in any way to soils, peat and superficial deposits and occurrence of limestone was collected from the six-inch field-maps. Field-work for the collection of material for study has been carried out, mainly in the Aberdeen district.

Study of Drainage Constituents of the Soil.—The study of the composition of soil drainage and the losses suffered by the soil through drainage has been continued. The results obtained from the Craibstone drain-gauges during 1931, when the third-year grass received intensive nitrogenous manuring, indicated that in spite of the heavy dressings there was no increase in the loss of nitrogen in the drainage waters. During the year 1932 further intensive nitrogenous manuring was given in order to confirm the previous results, and the analyses of the drainage waters again show no increase in the loss of nitrogen from the manured plots. The crop of grass and clover was cut at frequent intervals, the amount of clover determined, and analyses of these are being made.

Farmers may obtain advice regarding manurial and lime requirements of their soils, also copies of reprints of articles published, and any other information in regard to the work of the Institute, by applying to the Secretary.

MILK RECORDS.

THIRTIETH YEAR—RECORDS OF 31,415 COWS.

By WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D., Superintendent,
The Scottish Milk Records Association.

SYSTEMATIC milk recording in Scotland was continued in 1932 under the direction of the Scottish Milk Records Association on the same lines as in 1931 and previous years. The scheme of private or unofficial milk records for unregistered herds inaugurated in 1924 was also continued during this year.

The Association in 1932 consisted of the following members :

Name and Address.	Body Represented.
Mr John Robson, Jun., Lynegar, Watten	Caithness Milk Recording Society.
Mr Thos. Barr, Hobsland, Monkton	Central and South Ayrshire Milk Recording Society (5 Circuits).
Mr William Mitchell, Bennan, Straiton	
Mr William D. M'Cubbin, Lochlands, Maybole	
Mr William D. Wardrop, Rigg, Auchinleck	
Mr Andrew Wilson, Finlayston, Ochiltree	
Mr George Templeton, Carnell Farm, Hurlford	Central Ayrshire No. 2 Milk Recording Society.
Mr Alex. Y. Allan, Aitkenbar, Dumbarton	Dumbartonshire Milk Recording Society.
Mr John Johnstone, Millantae, Lockerbie	Dumfriesshire Milk Recording Society (3 Circuits).
Mr A. Kirkpatrick, Barr, Sanquhar	
Mr Mungo Sloan, Hunterhouse, Lochmaben	
Mr Robert Lohoar, Greenlees, Cambuslang	East Kilbride and District Milk Recording Society (2 Circuits).
Mr Alex. Paterson, Cathburn, Newmains	
Mr Hugh Andrew, Lennoxlove, Haddington	East Lothian and Border Milk Recording Society.
Mr Robt. M. Reid, The Glen Farm, Falkirk	East Stirlingshire Milk Recording Society.
Mr A. Dryburgh, Kirklandhill, Windygates	Fife Milk Recording Society (2 Circuits).
Mr William M'Adam, Athronhall, Milnathort	
Mr D. J. Gordon, Cullaird, Inverness	Highland Milk Recording Society.

Name and Address.	Body Represented.
Mr Dugald Graham, West Backs, Campbeltown	Kintyre Milk Recording Society.
Mr John T. Kirkwood, B.Sc., N.D.A., Scorrieholm, Lesmahagow	Lesmahagow Milk Recording Society.
Mr Andrew C. M'Candlish, Ph.D., B.Sc., Claunch, Sorbie	Lower Wigtownshire Milk Recording Society.
Mr Robert Laird, Lawthorn, Irvine	North Ayrshire (John Speir) Milk Recording Society (3 Circuits).
Mr J. M. Matthew, Girthill, Saltcoats	
Mr Thomas Murdoch, West Tannacrieff, Kilmarnock	
Rt. Hon. Lord Carnegie, K.C.V.O., Elsick, Newtonhill	North of Scotland Milk Recording Society (2 Circuits).
Dr Wm. Sinclair, North Loirston, Nigg	
Mr Robert Howie, Flatterton, Greenock	Renfrew and Bute Milk Recording Society (2 Circuits).
Mr John Telfer, Branchal, Bridge of Weir	
Mr James Whiteford, Caldcoats, Newton Mearns	Renfrewshire (Upper Ward) Milk Recording Society.
Mr Andrew Cochran, High Ardwell, Kirkcolm	Rhins of Galloway Milk Recording Society (5 Circuits).
Mr John Forster, Mains of Larg, New Luce	
Mr Alex. N. M'Caig, Challoch, Stranraer	
Mr James Wither, Awhirk, Stoneykirk	
Mr H. G. Baird, Kirkchrist, Kirkcudbright	Stewartry of Kirkcudbright Milk Recording Society (5 Circuits).
Mr George Barbour, Auchengibbert, Crocketford	
Mr T. Graham Clement, Howwell, Kirkcudbright	
Mr William P. Gilmour, Balmangan, Borgue	
Mr Hugh Hastings, Powillimount, Kirkbean	
Mr Eben J. More, Dalmacoulter, Airdrie	West Lothian Milk Recording Society.
Col. W. T. R. Houldsworth, Kirkbride, Maybole	The Ayrshire Cattle Herd-Book Society of Great Britain and Ireland.
Mr James Howie, Muirside, Holywood	
Mr John R. Miller, Midkelton, Castle Douglas	
Mr A. W. Montgomerie, Westburn, Cambuslang	
Mr James Kilpatrick, Craigie Mains, Kilmarnock	The British Friesian Cattle Society.
Mr John Telfer, Branchal, Kilmacolm	
Mr W. P. Gilmour, Balmangan, Kirkcudbright	The Highland and Agricultural Society of Scotland.
Mr Alex. Munro of Leanach, Culloden Moor	
Mr Alex. Murdoch, East Hallside, Hallside	
Hon. Godfrey P. Corbett, Rowallan, Kilmarnock	The West of Scotland Agricultural College.
Mr James Dunlop, Midland, Prestwick	
Mr Alexander Lauder, D.Sc., 13 George Square, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr Thomas Young, N.D.A., 13 George Square, Edinburgh	

Name and Address.	Body Represented.
Mr G. G. Esslemont, M.B.E., B.Sc., 41½ Union Street, Aberdeen	The North of Scotland College of Agriculture.
Professor J. Hendrick, Marischal College, Aberdeen	
Mr J. F. Tocher, D.Sc., 41½ Union Street, Aberdeen	
Mr John Forster, Mains of Larg, New Luce	Animal Diseases Research Association.
Mr W. Cassels Jack, Robiesland, Lanark	
Mr A. B. Fowler, B Sc., Kirkhill, Ayr.	The Hannah Dairy Research Institute.
Mr Norman C. Wright, M.A., Ph.D., Kirkhill, Ayr	
Mr Robert Dickie, Knockenjig, Sanquhar	Co-opted Members.
Mrs Eadie, Hazelbank, Dunlop	
Mr George W. Lambie, Pilmuir, Newton Mearns	
Principal W. G. R. Paterson, 6 Blythswood Square, Glasgow	
Sir Hugh Shaw Stewart, Bart., C.B., Ardgowan, Inverkip	

Chairman—Mr James Howie.

The following were the principal members of the staff :—

Secretary and Treasurer—Mr John Howie.
Superintendent—Mr William Stevenson, B.Sc., N.D.A., N.D.D.
Assistant Superintendent—Mr Percy H. Hart.

SCHEME OF OFFICIAL MILK RECORDS.

ADMINISTRATION.

In 1932, as in previous years, the scheme of official milk records was administered by the Association through local milk recording societies. The grant from the Treasury, obtained through the Department of Agriculture for Scotland, was continued in 1932 on the same conditions as in the previous year, though the amount authorised was reduced to £2527, compared with £2549 for 1931, £2610 for 1930, £2650 for 1929, £3000 for 1928 and £3350 for 1927. Owing to the reduction in the Treasury grant the Association were unable to give grants to local societies for new members.

Grants were allocated to local societies on the following scale :—

1. Societies testing at intervals of not more than twenty-one days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 9s. 6d. per member towards the cost of surprise check tests.

2. Societies testing at intervals of from twenty-two to twenty-eight days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.
(*b*) An annual grant of 8s. per member towards the cost of surprise check tests.

During the latter part of 1931 and the earlier months of 1932 every effort was made to obtain additional applications for membership of local societies throughout the various dairying districts of Scotland, and 62 definite applications were received. But for various reasons, such as the continued acute depression in the industry, members disposing of their dairy herds or changing their farms, abortion in herds, &c., there were more than the usual number of resignations.

All the local milk recording societies which operated in 1931 continued in 1932, with the exception of the small society of six members in Islay, who employed a part-time woman recorder. As a result of the severe economic depression in Islay several of the members were unwilling to continue recording, and it was found impossible under present conditions to keep the society in existence.

The number of recorders' circuits in 1932 was 40 ; the number of herds officially tested, 738 ; and the number of cows officially tested, 31,415, an increase of 14 herds and 839 cows from the previous year, and the largest number of herds and of cows tested in the history of the Association. The position in 1932 was considered satisfactory under the conditions prevailing in the industry, when other milk recording organisations and the majority of agricultural societies or associations were unable to maintain their former membership.

The following is a list of the milk recording societies which operated in 1932, with the name and address of the Secretary of each society :—

Name of the Society.	Secretary.
Caithness	Mr John Robson, Jun., Lynegar, Watten.
Central and South Ayrshire (5 Circuits)	Mr E. A. Bell, M.A., B.Sc., 13 Alloway Street, Ayr.
Central Ayrshire No. 2 .	Mr James Caldwell, Moorfield, Kilmarnock.
Dumbartonshire . . .	Mr John Bilsland, Quay Place, Dumbarton.
Dumfriesshire (3 Circuits)	Mr Thomas Henderson, Solicitor, Lockerbie.
East Kilbride and District (2 Circuits)	Mr Arthur Gilmour, C.A., 23 Silvergrove Street, Glasgow.
East Lothian and Border	Mr James L. Nisbet, Easter Newton, Kirknewton.
East Stirlingshire . . .	Mr Robert M. Reid, The Glen Farm, Falkirk.
Fife (2 Circuits) . . .	Mr William Macniven, The Nook, Southerton Road, Kirkcaldy.
Highland	Mr J. M. Hunter, Queensgate, Inverness.
Kintyre	Mr Robert Young, Drum, Kilkenzie.
Lesmahagow	Mr Gavin Hamilton, British Linen Bank, Lesmahagow.
Lower Wigtownshire .	Mr William Christison, Barglass, Kirkinner.
North Ayrshire (John Speir) (3 Circuits)	Mr John W. Goudie, Union Bank, Kilmarnock.
North of Scotland (2 Circuits)	Mr James W. Mathewson, 218 Hilton Drive Aberdeen.
Renfrew and Bute (2 Circuits)	Mr Thomas Hunter, Solicitor, 24 High Street, Paisley.
Renfrewshire (Upper Ward)	Mr William Henderson, Old Crookston, Nitshill.
Rhins of Galloway (5 Circuits)	Mr W. Brown Moir, 8 Bridge Street, Stranraer.
Stewartry of Kirkcudbright (5 Circuits)	Mr Patrick Gifford, Solicitor, Castle Douglas.
West Lothian	Mr James Ogilvie, Dalmacoulter, Airdrie.

SEASON 1932.

The table on the following page shows for each society or circuit the number of herds, the number of cows tested, the average interval between the tests and the duration of the recording season :—

[TABLE

	Name of the Society or Circuit.	No. of Herds.	No. of Cows Tested.	Average interval between Tests, in Days.	Duration of Recording Season, in Weeks.
1.	Caithness	1	11	...	52
	Central and South Ayrshire—				
2.	Ayr and Coylton	21	744	24	52
3.	Cumnock and District	18	526	23	52
4.	Girvan and Maybole	19	794	23	52
5.	Kilmarnock and Monkton	17	688	21	52
6.	Mauchline and Drongan	20	657	22	52
7.	Central Ayrshire No. 2	20	696	23	52
8.	Dumbartonshire	18	614	24	52
	Dumfriesshire—				
9.	Mid Annandale	23	901	28	52
10.	Upper Annandale	21	976	28	52
11.	Upper Nithsdale	20	943	28	52
	East Kilbride and District—				
2.	East Kilbride and District	18	716	24	52
3.	Hamilton and District	20	628	24	52
4.	East Lothian and Border	26	1083	28	52
5.	East Stirlingshire	21	688	26	52
	Fife—				
6.	Dunfermline and Kirkcaldy	19	655	25	52
7.	Cupar-Fife and Perth	19	518	25	52
8.	Highland	18	575	24	52
9.	Kintyre	12	527	28	52
20.	Lesmahagow	20	623	26	52
21.	Lower Wigtownshire	18	947	26	52
	North Ayrshire (John Speir)—				
22.	Fenwick	20	834	26	52
23.	'John Spier'	23	663	28	52
24.	Stewarton and Montgomerie	21	716	27	52
	North of Scotland—				
25.	Forfarshire and Kincardineshire	22	759	28	52
26.	Aberdeen and District	24	933	28	52
	Renfrew and Bute—				
27.	Bute and Inverkip	22	664	28	52
28.	Paisley and Kilmacolm	15	554	20	52
29.	Renfrewshire (Upper Ward)	11	484	28	52
	Rhins of Galloway—				
30.	Kirkcolm and District	16	1094	21	52
31.	Kirkmaiden and District	12	1096	25	52
32.	Leswalt	16	1189	24	52
33.	Luce Valley	16	947	21	52
34.	Stranraer and District	14	958	23	52
	Stewartry of Kirkcudbright—				
35.	Dalbeattie and New Abbey	18	876	23	52
36.	Castle Douglas & New Galloway	19	1175	24	52
37.	Castle Douglas and District	20	986	26	52
38.	Kirkcudbright and District	18	1102	24	52
39.	Borgue, Twynholm & Gatehouse	22	1129	25	52
40.	West Lothian	20	746	26	52
	Total No.	738	31,415	...	...

DEFINITIONS.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk fat contained in the milk. For convenience a gallon of milk was reckoned as 10 lb. A gallon of milk of average quality weighs almost exactly 10¼ lb. The following further particulars concerning each record were also given wherever possible :—

Name of cow, byre number and herd-book number.
Sire of cow and herd-book number of sire.
Dam of cow and herd-book number of dam.
Date of birth.
Date of calving preceding opening of record.
Number of weeks in milk.
Date of next calving after record closed.

The following particulars of the preceding record were appended to each record, where available :—

Date of calving preceding opening of record.
Quantity of milk in gallons.
Percentage of fat in milk.
Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders approved by the Association. The recorders visited the farms for this purpose at intervals varying from twenty-one to twenty-eight days, and each day of visit was regarded as the middle day of the period covered by the visit. Milk records estimated in this way approximate closely to the actual milk yields.

METHOD OF RECORDING ADOPTED—OFFICIAL RECORDS.

A distinctive feature of milk recording in Scotland in 1932, as in former years, was that the official records were entirely the work of trained official recorders. Recorders had previously to undergo a special course of training in milk recording at the Dairy School for Scotland, or other approved College of Agriculture. Only candidates of good character and good general education were selected to attend these courses ; and all recorders, before appointment, were approved by the Executive Committee of the Association.

Fuller details of the method of recording adopted will be found in the Association's annual report. The byre sheets were written out in duplicate. The principal copies were posted at regular intervals to the office of the Association, and the second copies left with the respective members. The recorder transferred the results from the extended byre sheet to the milk record book for the herd indelibly in ink, each cow being assigned a separate page, at the top of which full particulars of the cow were entered, including the indelible tattoo marks on the animal.

The byre sheets were carefully revised and corrected in the Association's office during the season, and a list of the necessary corrections sent to each recorder periodically to be entered in the record books.

Visits of inspection were made to each recorder and to the members of local societies at the different farms periodically throughout the year by members of the Association's staff, and reports thereon submitted to the Executive Committee. The Executive Committee reserved the right to withdraw approval of any recorder at any time, or to limit the period of service of any recorder with any particular society. Members of local societies refusing to observe any of the rules of the Association, or deemed to be guilty of conduct injurious to the true interests of milk recording, were liable to be temporarily or permanently suspended.

Another distinctive feature was the surprise check tests, the records of each herd being checked in this way about two times throughout the year. The recorder was instructed, by a letter from the superintendent on a date unknown to recorder and owner of herd, to remain at the same farm another day and make another complete twenty-four hours' test. The surprise test results were entered on special buff-coloured byre sheets, and in the record books in red ink immediately below the results of the regular test of the previous day. The buff byre sheets were posted to the Association's office with the other sheets, and any abnormal differences were immediately noted and were reported to the Executive Committee.

As a result of this system of surprise check tests, each page of the 1932 milk record books contains entries in red, comparison of which with the immediately preceding entries provides valuable evidence as to the genuineness of the milk records.

In addition to the surprise check tests made by the recorder, a number of independent surprise tests were made by the Association's staff in order to check the recorder's work.

All records were closed at the end of December, the current lactations being carried forward to the new books of the following year. Finally, summary sheets were written out in duplicate showing the total milk yields for each cow for the lactation or part lactation, with full particulars of the cow, dates of calving, &c. The principal copy of the summary sheet was posted to the Association's office with the record book, and the second copy left with the owner of the herd.

All record books and summary sheets were carefully revised, corrected in detail and initialled in the Association's office during the next few months, the record books being returned later to the respective members, and the summary sheets retained and bound for future reference.

The milk records were next classified into three groups for cows and heifers respectively on the following basis. Experience has confirmed the view that a very useful comparison is obtained by reckoning the yields at their estimated equivalent of milk of 1 per cent fat. Such a comparison takes into consideration both the quantity and the quality of the milk.

Cows with a milk record equivalent to not less than 2500 gallons at 1 per cent fat, and heifers with a milk record equivalent to not less than 2000 gallons at 1 per cent fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—viz., 1660 and 1330 gallons respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk fat :—

Class.	Yield in Milk of 1 per cent Fat. (Gallons.)	Corresponding Yield in Milk of 3·5 per cent Fat. (Gallons.)
Cows in Class I. . .	Not less than 2500 .	714
Heifers in Class I. .	Not less than 2000 .	571
Cows in Class III. .	Less than 1660 . .	474
Heifers in Class III. .	Less than 1330 . .	380

All cows and heifers with milk yields falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. It should be noted, however, that Class II. would include a certain number of unclassified yields, as there were a number of cases where, from various causes, the results of a whole normal lactation could not be obtained.

The Association will shortly publish an annual report giving fuller details of the work of the Association and of each local milk recording society during 1932. This report will include tables showing for each farm the number of cows and heifers tested and the number and percentage included in Classes I. and III. respectively. Each herd is included under the respective local society, but is represented only by an alphabetical letter, the owner being advised privately of the identity in the report of his own herd or herds. From these tables any member may see at a glance how his herd compares with other herds in the same or any other district, and the improvement in his own herd compared with previous years. The report will also show in tabular form the percentage of Class I. and Class III. animals of all animals tested under the Association's scheme during the year, and will thus afford a valuable indication of the progress in milk production generally.

An important feature of the Association's annual reports, from 1917 inclusive, is the register of good milking cows with the names and addresses of owners and full particulars of the milk records. This register includes only the records of animals with a milk yield equivalent to not less than 2800 gallons containing 1 per cent of milk fat in the case of a cow, and 2240 gallons containing 1 per cent of milk fat in the case of a heifer, and is further restricted to animals which completed their lactations before the end of the year and gave birth to another calf within not more than fifteen months of date of previous calving. Full particulars of each record are given, and all lists of records are submitted to the owners of the respective animals for revision before publication. The register is of great value to all interested in increased milk production and in the breeding and rearing of animals of the best milking strains, and is invaluable for reference.

It should always be kept in mind when making a comparison of cows in different herds or in different districts that the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animal. But the authenticated milk records compiled by the Association are of inestimable value to breeders and owners of dairy cows if properly interpreted.

REVIEW OF 1932—OFFICIAL RECORDS.

Recording was carried on in 1932 by 40 local societies or circuits, comprising 738 members. The number of cows tested in 1932 was 31,415, compared with 30,576 in 1931, and was the largest number officially tested in the history of the Association.

The percentage of dairy cows officially recorded in Scotland compares favourably with that of other countries. With the exception of Denmark, where milk recording was introduced earlier than in Scotland and conditions prevail more favourable to movements on a co-operative basis, Scotland contains a higher proportion of officially recorded dairy cows than any other country.

During the year 8 recorders, for various reasons, terminated their engagements. The Executive Committee, however, in the same period approved of 19 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders. Seven women recorders were employed in 1932 and 39 men recorders. In this connection the Committee are indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Only one special course was required in 1932—namely, in December. Twenty-two selected candidates attended the course, and 19 obtained the certificate.

The Executive Committee purchased the supplies of milk-testing apparatus, sulphuric acid and amylic alcohol for local societies, as in previous years.

The system of surprise check tests, introduced in 1920, was continued in 1932. The total number of check tests made by recorders during the season was 1129. In no instance in 1932 was the average milk yield for the herd more than 3 lb. milk daily less on the occasion of a check test as compared with the previous day. Only 2 herds showed an average of over 2 lb. less. In addition to the surprise tests arranged for and carried out by the recorders, the Assistant Superintendent made 42 special check tests of different herds. The results in most instances agreed very closely in regard both to average milk yields and fat percentages with those of the recorders' previous tests. Only 2 herds showed an average daily yield of over 2 lb. less on the occasion of a special check test, and no herd had an average of over 1½ lb. more. With regard to average fat percentages, 3 herds showed an average fat percentage of over ·2 per cent lower, and 3 herds an average of over ·2 per cent higher. With the exception of 6 herds, the average fat percentages were all within ·2 of those obtained by the recorders at the previous tests.

With regard to the general conditions for milk production during 1932, the weather showed considerable variation. Rainfall was exceptionally light until the last week of March, when broken and stormy conditions prevailed in all districts. Unsettled weather, with low temperatures and cold winds, was general throughout April and the first three weeks of May. Remarkably mild, dry and sunny conditions prevailed throughout the whole country during June. The prolonged absence of moisture somewhat retarded the development of crops, particularly roots; and for a time rain was urgently needed, especially in the western counties. Local showers were general during the second half of July. In August warm, bright, dry weather was again enjoyed in practically all parts of the country. The weather gradually deteriorated during September and October, and during the last three weeks of the latter month rain was general in all districts. The weather during October was mild and advantageous for the growth of root crops.

The hay crop became well established during the mild winter months and showed exceptionally thick and strong growth, but cold weather in April checked the vitality of the plants. Where cutting began early the hay was secured in excellent condition, but that portion of the crop cut somewhat later was harvested in only fair condition. After the weather became unsettled some of the hay was so long lying in the fields that portions of it were considerably damaged. Meadow hay bulked slightly better than 'seeds' hay, but clover was generally deficient in the crop. Preparation of the land for root crops was hampered by the rain, and sowing was late in being finished. Germination was slow, and as a consequence of the dry weather in June growth was retarded. The mild humid weather of July, however, favoured the crop, also the mild open weather during the autumn, and in most districts the yield was equal to the average of past years. Owing to the mildness of the weather during the first three months of the year pastures were fresh and green at the beginning of the season. On the whole grass was plentiful during the summer and autumn, though the drought in June had rather a serious effect in some districts. Dairy cows did well throughout the season, and the milk yield was well maintained.

But prices generally for milk and milk products relative to costs of production were no better than in the immediately preceding years, which were far from satisfactory in this respect, in the case of the latter due to highly organised foreign competition, and of the former largely to opposing interests creating difficulties in marketing. Economic conditions did not encourage owners to produce the best possible milk yields from their herds. From the financial point of view the year was probably the worst of the series of twelve poor years in succession.

In the case of recorded herds, other conditions militated against a higher average yield. As in recent years, a considerable proportion of herds which had been recorded for a period of years were entirely dispersed, or for other reasons already referred to did not continue to be recorded, while a considerable number of 'new herds,' or herds tested for not more than three years, were included. The proportion of regular milk record herds was thereby correspondingly reduced.

The following table shows for each society or circuit the number and percentage of cows and heifers of each class in 1932, with a comparison of the average results from 1914 to 1932 inclusive :—

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
1. Caithness	11	...	...	...	...*
Central and South Ayrshire—					
2. Ayr and Coylton	744	618	2	88	..*
3. Cumnock and District	526	463	...	88	...
4. Girvan and Maybole	791	591	10	78	1*
5. Kilmarnock and Monkton	688	557	7	86	1*
6. Mauchline and Drongan	657	514	3	85	...*
7. Central Ayrshire No. 2	696	620	...	94	...*
8. Dumbartonshire	614	486	3	79	...
Dumfriesshire—					
9. Mid Annandale	901	638	4	79	...*
10. Upper Annandale	976	734	18	75	2
11. Upper Nithsdale	943	656	24	70	3
East Kilbride and District—					
12. East Kilbride and District	716	453	14	64	2*
13. Hamilton and District	628	428	11	73	2*
14. East Lothian and Border	1083	705	29	68	3*
15. East Stirlingshire	688	519	8	78	1*
Fife—					
16. Dunfermline and Kirkcaldy	655	500	10	76	2
17. Cupar-Fife and Perth	518	368	12	71	2*
18. Highland	575	291	4	73	1*
19. Kintyre	527	359	9	68	2*
20. Lesmahagow	623	516	7	83	1
21. Lower Wigtownshire	947	599	24	63	3*
North Ayrshire (John Speir)—					
22. Fenwick	834	650	9	78	1
23. 'John Speir'	663	463	9	72	1*
24. Stewarton and Montgomerie	716	516	5	77	1*
North of Scotland—					
25. Forfarshire and Kincardineshire	759	606	6	84	1*
26. Aberdeen and District	933	476	13	61	2*
Renfrew and Bute—					
27. Bute and Inverkip	664	459	11	69	2
28. Paisley and Kilmacolm	554	404	1	73	...
29. Renfrewshire (Upper Ward)	484	394	2	81	...
Rhins of Galloway—					
30. Kirkcolm and District	1094	705	14	73	1*
31. Kirkmaiden and District	1096	737	27	67	2
32. Leswalt	1189	789	29	67	2*
33. Luce Valley	947	558	24	59	3
34. Stranraer and District	958	666	18	71	2*
Stewartry of Kirkcudbright—					
35. Dalbeattie and New Abbey	876	537	30	61	3
36. Castle Douglas and New Galloway	1175	827	17	70	1
37. Castle Douglas and District	986	574	28	58	3

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
38. Kirkcudbright and District	1102	841	10	76	1
39. Borgue, Twynholm and Gatehouse . . .	1129	663	30	63	3*
40. West Lothian . . .	746	466	23	64	3*
Of all the cows and heifers tested in 1932	31,415	21,946	505	72½	1½
Comparison with 1931 .	30,576	21,445	478	72¼	1½
Comparison with 1930 .	30,720			70	1¼
Comparison with 1929 .	30,898			68	1¾
Comparison with 1928 .	30,293			66	2½
Comparison with 1927 .	29,459			65¾	2¾
Comparison with 1926 .	29,236			65½	2¾
Comparison with 1925 .	28,410			60	5
Comparison with 1924 .	27,957			65	3
Comparison with 1923 .	26,952			65	2
Comparison with 1922 .	27,275			63	2
Comparison with 1921 .	26,752			58¾	4
Comparison with 1920 .	24,191			55¼	3¼
Comparison with 1919 .	20,786			49½	4½
Comparison with 1918 .	17,827			49	5½
Comparison with 1917 .	19,564			50	4¾
Comparison with 1916 .	22,702			53¼	4¾
Comparison with 1915 .	26,572			46	6
Comparison with 1914 .	26,424			39½	9

* Excluding herds tested during only a part of the recording season—1119 cows in all.

Reviewing the results of the 40 circuits as a whole, we find that of the total of 31,415 cows and heifers tested in 1932, excluding 1119 animals in herds tested during only a part of the season, and therefore not classified, 21,946 were included in Class I. and only 505 in Class III. This is equivalent to 72½ per cent in Class I. and 1½ per cent in Class III. Thus, 72½ per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 714 gallons containing 3·5 per cent milk fat in the case of a cow and 571 gallons in the case of a heifer, while only 1½ per cent gave a milk yield equivalent to less than 474 gallons containing 3·5 per cent milk fat in the case of a cow and 380 gallons in the case of a heifer. In 1931, 72½ per cent were eligible for Class I., and 1½ per cent were included in Class III.

The average standard attained in 1932 was undoubtedly lowered by the inclusion of the considerable proportion of 'new' herds, and by the adverse trading conditions already referred to, yet it will be observed from the preceding table that the proportion of animals qualifying for inclusion in Class I. in 1932 is the highest reached since the commencement of official milk recording thirty years ago.

It will be observed also that the proportion of good milking or Class I. cows and heifers to the total animals tested has increased from 39½ per cent in 1914 (when the present basis of classification was adopted) to 72½ per cent in 1932, while the proportion of Class III., or obviously unprofitable, animals has been reduced in the same period from 9 per cent to 1½ per cent. These figures indicate a large increase in herd average milk yields, yet do not represent the full extent of the progress made since the introduction of milk recording in 1903. It is estimated that milk record herds generally are at the present time giving higher average yields than unrecorded herds to the extent of considerably over 200 gallons per cow per annum.

Improvement from milk recording is not confined to herds officially recorded in 1932. A very much larger number have been tested and recorded for longer or shorter periods since the Association's scheme of milk recording was introduced. And when we consider the spread or diffusion of the benefits arising directly or indirectly from milk recording, we find that these penetrate widely in various directions other than that of individual members of milk recording societies. For example, there is the effect on the remaining four-fifths of the dairy herds of the country. The wide dissemination annually of milk record stock bulls and milk record cows for breeding purposes among untested herds alone must exercise an incalculable improving influence on a very large number of these herds. Such influence is increasing with the extension of the practice of using only milk record bulls in dairy herds.

There is also the powerful educational influence and force of example permeating and leavening the whole mass of dairy farmers, and gradually creating a new habit of thought in the realm of milk production. If a census could be taken in this connection it would probably be found that a very considerable proportion of herd owners outside the membership of milk recording societies are in one way or another testing and recording the milk yields of their herds who would never have done so had systematic or official milk recording not been in operation. The same consideration applies to the more enlightened methods of selecting, breeding and feeding on milk record lines which have been adopted in many herds not officially recorded.

There is another direction in which advantage from milk recording is penetrating widely beyond the ranks of milk recording societies. Increased efficiency in the production of milk lowers the cost to the urban populations, and some portion of the return from milk recording is handed on beyond the actual milk producers.

There remains a still wider aspect of the question. Large numbers of milk record bulls and young cows are exported annually, and go to maintain and improve the milking qualities of the dairy herds of the Empire.

The Association's activities are not confined to the official testing and recording of the individual milk yields, but are directed also to assisting the herd owners to improve their methods of production by means of the records obtained. The work is to some extent of an educative or advisory nature. Official recorders have to attend a course of instruction, which includes the feeding and general management of the dairy herd, and are required to do all they can to interest and advise the members in this connection. The Association have prepared and issued to all members a concise practical guide to winter feeding of dairy cows, containing a table of fifteen selected food mixtures adapted to different conditions, and recorders and central staff take every opportunity of assisting members to follow the instructions given therein.

NEW SCHEME OF PRIVATE OR UNOFFICIAL MILK RECORDS.

The Association's scheme of private or unofficial milk records, inaugurated in 1924, was continued in 1932 on the same lines as in previous years. The chief objects are to establish milk recording on a wider and more popular basis, and to induce a greater number ultimately to adopt the system of official authenticated milk records.

Milk recording under this scheme was administered directly by the Association. The following inducements were offered to members :—

(*a*) The hire of a set of appliances for testing purposes free of annual charge, the member to upkeep the apparatus in good condition.

(*b*) Byre sheets and record books free of charge, with stamped addressed envelopes for return of byre sheets.

(*c*) All calculations in byre sheets and record books to be made in the Superintendent's office, and the sheets and record books to be returned to the herd owners duly extended and completed.

(*d*) The total charge on members to be limited to an annual subscription to the Association at the rate of 1s. per cow tested.

Twenty-one new members were enrolled for 1932. Two of the members were transferred to the scheme of official recording. The total membership for 1932 was 110, with 2132 cows, an increase of 3 herds and 20 cows from the previous year. This new scheme of recording had in 1932 already been the means of obtaining for official recording 40 new members of a very desirable type, which is one of the objects for which it was promoted.

There are several reasons why the membership under this scheme has not increased more rapidly. The better milking herds are gradually being transferred to official records. Further transfers have been arranged for season 1933. At the other extremity there are a considerable proportion of very poor herds, the owners of which are evidently unduly discouraged by the low yields recorded, and apparently have not the mentality to appreciate the possibilities of effecting the much-needed improvement. Also, a number of members, after two or three years' experience, believe they can carry on recording on similar lines independently at smaller cost.

This scheme of unofficial recording is serving a useful purpose. For reasons already given, its effect must not be measured merely by the number of herds included in any particular year; account must be taken of its educational influence and propaganda value. Thus a considerable proportion of the members who have resigned, and meantime severed their connection with the Association, have acquired the milk-recording point of view, and ought ultimately to be found among members of milk recording societies. No fewer than 375 herd owners have been initiated in milk recording through its operation.

The following is a brief outline of the method of recording adopted :—

All cows in the herd yielding milk must be included in the record. Each cow must be clearly distinguished in the byre by a stall number on the wall. On the occasion of a test the cows must be milked in the same rotation evening and morning, and care must be taken that the milk of each cow for twenty-four hours, and for twenty-four hours only, is included in the test. The owner, or his agent, is required to weigh the milk of each cow evening and next morning, by means of the spring balance and pail provided, once every twenty-one to twenty-eight days, and to enter the results and other necessary particulars in the byre sheet provided by the Association; and each byre sheet must be signed by the owner, or on his behalf, as correct in respect of all entries made. The byre sheet is sent by first post to the Superintendent, and calculated and extended by the Association's staff, and returned to the owner as soon as completed. A milk record book for each herd is written out in the Association's office. The record books are closed at the end of the recording season as at 30th November, and the results summarised and entered in special summary sheets. The record books and copies of the summary sheets, when completed and checked, are sent to the respective owners of the herds.

It must, of course, be clearly understood that the milk records compiled under this scheme are purely unofficial unauthenticated records, and have no connection with the official authenticated milk records of the Association. But from letters received and opinions expressed by members it is evident that very useful guidance may be obtained from the records.

PROSPECTS FOR 1933.

Propaganda on an extensive scale is carried through each year. Applications for membership, or for further particulars, are invited through press advertisements, articles, bills posted at auction marts, &c. All members of the Association, members of local milk recording societies, members under the scheme of unofficial records and milk recorders are requested individually to assist in obtaining new members for either scheme in their respective districts, and to send to the Superintendent the names and addresses of local dairy farmers likely to be interested. In this way a comprehensive propaganda list of possible new members is compiled. To each address on this list are sent circular letters and propaganda literature giving particulars of both systems of recording and enumerating the advantages to be obtained, and a form of application. Following on the distribution of literature, personal visits are made to most of the farms by the Association's staff, and the herd owners are classified into three groups according to the degree of probability of their becoming members. Wherever any particular interest is shown, the visit is repeated until a definite decision is reached. By this method, continued over a number of years, dairy farmers who were formerly quite indifferent have been enrolled as new members.

Similar efforts were made to obtain additional applications for membership of local societies in 1933. With the scheme of private or unofficial milk records in operation, it was possible to carry out propaganda work for both schemes simultaneously, and over 2000 circular and other letters, with propaganda literature, were distributed to dairy herd owners throughout Scotland. In addition, 1261 personal visits were made. But the severe depression in dairy farming which has existed now for twelve years was evidently having a cumulative effect on herd owners, who were seeking to cut down expenditure in every possible direction, and there was the greatest difficulty in persuading any of them to adopt any new scheme entailing the slightest additional expenditure. The number of new members for official records for season 1933 obtained to date is 61, and a considerable number of prospective new members for the year following have also been obtained. If only conditions generally in the dairying industry were more normal, with better prospects for the marketing of the produce, there would be every reason to expect a considerable increase in membership of milk recording societies in the immediate future.

All the local societies of 1932 have continued in 1933 with the exception of the single-member society in Caithness, the member in question having removed to England. The Rhins of Galloway Society, with a view to economy in working, decided to extend the intervals between tests and have four large circuits instead of five smaller circuits. The North of Scotland Society, on the other hand, owing to an increase in membership, formed an additional recorder's circuit. The number of recorders' circuits in 1933 is 39, and the number of herds and cows officially tested will be approximately the same as in the previous year.

The Committee are in a position to recommend a sufficient number of qualified recorders. All vacancies at the beginning of the year have been filled, and there remain a number of approved recorders on the waiting list. The Committee have arranged for supplies of sulphuric acid, amylic alcohol and milk-testing apparatus for local societies in 1933.

With regard to unofficial records, 20 new members have been enrolled. One of the members has been transferred to the scheme of official recording for season 1933, making a total of 41 transferred. The total membership for unofficial recording at present is 115, with approximately 2230 cows.

GENERAL REVIEW.

The popular attitude to a movement designed to affect any large section of the community has often been found to be very different from what the originators had in view. In this respect milk recording has proved no exception. The main object of the promoters of official milk recording in Scotland thirty years ago was to enable dairy farmers to improve the dairy herds as milk producers; by better weeding, feeding and breeding to build up herds of better milkers; and by increasing the milk yield per cow to lessen the cost of production. They were confident that after a short trial of this new method by a number of the more enterprising farmers its advantages would be so apparent that within a comparatively few more years the majority of milk producers would adopt it. Fortunately, there are always a number able to visualise the advantages inherent in a new idea, and most of the early pioneers in milk recording have derived great benefit from its operation right through from its inception.

At the present time a considerable proportion of the dairy herds of the country can show through milk recording increased average yields of over 300 gallons of milk per cow per year. Herds which formerly gave only 600 gallons per cow now yield over 900 gallons. Many are much better, with average yields ranging from 900 to 1200 gallons. And the experts have proved for us by careful experiment that the cost of producing a gallon of milk is proportionately much less with a cow producing 900 gallons each year than with a cow giving only 600 gallons. This fact is obvious without elaborate investigation. If a 600 gallon herd can even merely pay its way, a 900 gallon herd under otherwise similar conditions can be worked at a profit. The extra 300 gallons have to meet little more than the extra food of the cow; and the amount of extra food required for the additional 300 gallons is in proportion less than the food required for the first 600 gallons, as nothing more is required for body maintenance. It is sufficient to provide only about 3½ lb. of concentrated foods for each additional gallon of milk. It is clear, therefore, that the 900 gallon milk record herd is in a better position to meet the present acute depression in the industry than the 600 gallon unrecorded herd, without taking into account the higher prices obtainable for dairy stock with good milk records or milk record pedigree.

It is evident that the unrecorded herds with their lower average milk yields are not so good for milk production or for making a profit as the average recorded herd. Yet the fact remains that 80 per cent of Scottish dairy farmers still stand aloof from official milk recording, while only a very small percentage of this number engage regularly in milk recording of any description. And this in face of a common interest—to produce milk as cheaply as possible in order to make the best profit. It may be mentioned in this connection that the payment of a member to his local milk recording society runs in general to only from a halfpenny to three farthings per cow per week. Why, then, have so many failed to take advantage of the national scheme of milk recording? This is a question which applies not only to this country but to all countries where dairying and milk recording are in progress; evidently it is one for the psychologist.

It is of interest, however, to note the various phases through which the popular attitude to milk recording in this country has passed during the last thirty years. For some years it was considered by dairy farmers generally to be merely a sort of fad for the few, a new 'stunt' for those fond of advertising, or something for the milk producer analogous to the show ring for the exhibitors of 'fancy Ayrshires.' Among the latter were to be found many of its strongest opponents. At this early stage the idea was believed to be merely that of making wonderful records, and the records were received by the majority of dairy farmers with the utmost scepticism.

But the pioneers continued, and increased in number. An improved system of milk recording was evolved, and the records came to be accepted more generally as more or less reliable. In 1909 official milk records of a given standard were adopted by the Ayrshire Cattle Herd Book Society as a condition of eligibility for entry in the Appendix to their Herd Book. This method of milk production, however, was still considered to be a more intensive system than was advisable for ordinary dairy herds. The high milk yields, it was held, were due largely to 'forced feeding'; they were uneconomical; bad for the cows; shortened their lives; milk recording would soon defeat its own object; the herds artificially forced would be ruined. At this stage cows with high milk records were not generally approved. They were believed to be no better for the ordinary farmer than the unrecorded cows. In general no better prices were obtained at public sales for such animals, while ordinary cows drafted from milk recorded herds were decidedly suspect.

It is significant, perhaps, that during this phase, for several years, a considerable number of the new members discontinued after a year or two. These had evidently also been of the opinion that only forcing by feeding was required to make good records. One or two years' experience sufficed to disillusion them, and they retired from the limelight of milk recording. This turn was unfortunate from the point of view of propaganda, as it discouraged from commencing milk recording many who might otherwise have taken it up.

But the more intelligent farmers persevered and succeeded, and a considerable body of regular members was established. Irrefutable evidence accumulated, and the good results achieved in many herds could no longer be ridiculed, or even explained away. The high milk record cows were not killed off. The type did not become extinct. On the contrary, their number increased amazingly. It became increasingly evident that, for whatever reason, recorded herds were producing more milk and were steadily improving at it. The percentage of Class I. cows and heifers was increasing more or less steadily each year, at a time when the method of recording was being more and more strictly supervised. The stage was duly reached at which higher prices were readily offered for good milk record stock, and when milk records were introduced into judging at cattle shows. The 'New Show' at Ayr was first held in 1921.

The original promoters of milk recording had founded on sound principles, in harmony with natural law. Natural law must prevail in the long run, no matter the obstacles in the path. It is probable we have entered upon a new phase in the popular attitude to this movement, this time more closely in line with the aims and intentions of the originators. If so, our milk recording scheme will better serve the needs of the times, which were never more urgent. Formerly, normal conditions in the dairying industry proved more favourable for extension. When demand and prices for milk were good, farmers considered they could do quite well without milk recording; when times were bad, they could not afford the small additional outlay required. The prevalent idea evidently was that with milk prices low it did not pay to feed well, and without good feeding good milk records could not be obtained. A more enlightened opinion, however, can now be discerned—that milk recording may be more useful, or more necessary, in times of depression; that it may be applied to limit production and, at the same time, cheapen production by the elimination of the low yielding cows, the more systematic feeding of the good milkers in relation to actual daily yields, and by the adoption of a more rational policy in breeding in the light of the records obtained. In 1932, a year of deepest depression in the milk-producing industry, we had more members in our milk recording societies in Scotland than in any previous year. Further evidence is to be found in the higher level of prices offered at recent sales of milk record pedigreed bulls. It has at length become more generally realised that a lower cost per gallon of milk is to be achieved by the policy of a higher milk yield per cow, and that systematic milk recording is a valuable means to this end. Necessity has forced many to this conclusion.

It has already been emphasised on a previous page of this report that advantage from milk recording penetrates beyond the ranks of milk recording societies. But one result not there referred to is the vast accumulation of valuable data offering a fruitful field for research workers. Much of value may be gleaned from this store to advance knowledge and direct future effort, particularly in breeding problems. The Scottish milk records are valuable for investigators owing to their authenticated character, and have already been put to good use in more than one Scottish Research Institute. The Association have obtained a short article for their forthcoming annual report on "Milk Recording in Relation to Breeding Problems," by Mr A. B. Fowler, B.Sc., of the Hannah Dairy Research Institute, from which the following observations are drawn :—

Modern farming tends to be based more and more on scientific method. This tendency is most marked at the present time, when agriculture, in common with many other industries, is suffering from the existing depression. Farmers are showing increased readiness to secure any advantage which may accrue from scientific discovery.

There is, however, one branch of agriculture in which scientific knowledge is not far ahead of practical experience—namely, in animal breeding. In the dairy industry, breeders have not been uniformly successful in breeding for high milk production, and realise that there must be influences at work which at present remain unaccounted for.

This view is clearly expressed in the General Report for 1931, where Mr Stevenson writes: "Evidently, experience in Denmark from using milk records in the breeding of dairy cattle has been very similar to that elsewhere, the mating of high-yielding strains has not produced high-yielding progeny to the extent anticipated. It has been found that there may often be a wide difference between a high-yielding cow and a cow which when mated to a good bull can breed only high-yielding stock. Improvement in herd average milk yield has been the result more of discarding low-yielders than ceasing to breed them. Milk recording farmers have not so far as expected bred fewer poor yielders, but have merely ceased to keep them."

It seems, therefore, that many practical breeders have reached the stage where little further progress can be attained by present methods. Under these circumstances it is unfortunate that scientific knowledge of breeding for improved milk production has not been further advanced.

We do know, however, that milk yield is definitely correlated to certain inherited characteristics such as body weight, body length, body width, body girth, hip height, shoulder height and rump length, as well as to other heritable characters which are more difficult to measure, but which undoubtedly affect total milk yield. These are the characteristics which the showyard judge has, or should have, in mind when judging a dairy breed; but danger lies in the over-stressing of these characteristics from the show or 'fancy' point of view. Over-emphasis on showyard or fancy points, and failure to realise that the dairy cow is, first and foremost, a utility animal, is a ruinous policy.

In this connection it is of interest to note what took place when the successful development of the Ayrshire breed was menaced by over-emphasis on the value of the vessel-bred type of animal which predominated at shows promoted by the Ayrshire Agricultural Association. In 1921, through the influence of a number of prominent breeders, the Ayrshire Herd Book Society inaugurated a special show, termed the

'Ayr New Show.' The chief aims of the promoters of the new show were to give due recognition to mammary development, and to actual, as well as potential, milk yield. For this purpose a revised system of judging was formulated, based on the following points :—

Form, symmetry and constitution . .	30 points.
Mammary development, to include teats, shape of udder, milk veins, &c. . . .	35 points.
Authenticated Milk Yield in the case of a cow	35 points.
Authenticated Milking Pedigree in the case of bulls and heifers	35 points.

In allocating the points for authenticated milk yield and authenticated milking pedigree, a minimum and maximum yield was fixed. The minimum for a heifer was to be the equivalent of 500 gallons and for a cow 650 gallons. The maximum for a heifer was the equivalent of 850 gallons and for a cow 1000 gallons, all at 3·8 per cent butter fat. All yields had to be taken and recorded in accordance with the Scottish Milk Records Association regulations, and the yields had to be certified by the Secretary of the Association. Fifty-two weeks were taken as the normal period between calvings, and yields of lactations beyond the normal were reduced in inverse proportion to the length of the lactation as compared with the normal calculations being made to the nearest full week. The opening date of calving and date of next calving had in every case to be specified. The New Show provided a strong incentive to breeders of the milk strain of Ayrshire, and the results obtained certainly justified its existence.

A careful examination has been made of the show catalogues of 1921 and 1927. The points awarded for authenticated milk records of the 78 animals entered in 1921 and of the 76 animals entered in the final year 1927 were collected and calculated, and work out as follows :—

Year.	No. of Animals examined.	Per cent under 30 points.	Per cent over 30 points.
1921	78	57·7	42·3
1927	76	7·9	92·1

This table, which gives a comparison of the points awarded for milk yield in the first and last years of the show, indicates the improvement which took place in the animals shown. This improvement could have been due to three causes, or to a combination of them : first, to improved breeding from milk recorded strains ; second, to the better method of judging ; and third, to the fact that an opportunity was now available for breeders to exhibit animals which would never have been shown under the old conditions.

The adoption of milk records as a basis for marks did, however, achieve the desired object of bringing the best yielders into prominence, and of preserving a proper balance between show points and productive capacity.

To the progressive breeder the importance of a proven sire cannot be over-stressed; the appalling waste of potentially productive animals through ignorance of the value of a proven sire is deplorable. The argument against keeping these older animals—namely, the difficulty in handling them as compared with a younger bull—is a weak one, when one considers the relative advantages of the two types of animal in effecting improvement in stock. In the first case the breeder is using a known factor for improvement, while in the second he is relying on the vague hope that the progeny of the young bull will turn out to be high yielders. Here again milk recording forms an essential part of the breeder's programme, since a bull's potentialities can only be proved by the accurate recording of his daughters' milk yields.

In this connection it is encouraging to note the increasing interest taken in the production records at recent bull sales. This clearly demonstrates that breeders are putting more faith in constructive breeding than formerly, and indicates that the time is ripe for concerted action in regard to the proven sire.

Space does not permit of a full survey of our present-day knowledge of breeding for milk production. One noteworthy example is inbreeding, an aspect which at present intrigues many practical as well as scientific breeders. For those who wish to adopt inbreeding methods it is, of course, important to study the constitution of the parents. It has been proved that strong constitution is dominant over weak constitution, and this implies that breeding animals may be carrying the characters for weak constitution, although they themselves appear constitutionally sound. By inbreeding to such animals an owner will run the risk of passing on a weak constitution to young stock in his herd.

Results obtained by a recent Australian investigator show that close inbreeding decreased both milk and total butter-fat production, as did outcrossing with unrelated animals. Line breeding, on the other hand, which is the mating of more or less distantly but distinctly related animals, increased both butter fat and milk yields. The breed employed, however, was dual purpose, and how far his results can be applied to a purely dairying breed is doubtful.

There is another factor which may elucidate the problem of breeding for higher milk yields—namely, the question of sex linkage. This possibility has already been discussed in an article on "Breeding for Milk" by Mr A. D. Buchanan Smith, which appeared in the 1929 Report. The author suggests that one or more of the factors governing milk yield may be inherited on a sex-linked basis. If true, this implies that the bull inherits from his sire only those structural characteristics which (as already stated) can be correlated to milk yield, and does not carry inherent capacity for high milk yield. The important animal in the bull's pedigree, as regards milk yield inheritance, is, according to this theory, his dam.

Investigators are still wrestling with this and other breeding problems, and it is to be hoped that the time is not far distant when our knowledge of the inheritance of milking capacity will permit the adoption of more scientific methods of breeding.

In the meantime, however, we are to a great extent dependent on milk recording in selecting our stock and maintaining milk yields at a reasonably high level. With or without scientific breeding methods, milk recording must always play an important part in the development of our dairy breeds. It not only benefits the individual breeder, but is of great value also to breed societies and to the expert in genetics.

It assists the various breed societies by enabling them to study (and to advertise !) the potentialities of their own breeds, and to recruit valuable non-pedigree strains into the herd book. In this connection it is significant that, in a recent survey of the Ayrshire breed, it was found that nearly two-thirds of animals entered in the herd book up to 1927 were related to non-pedigree females in the third or fourth generation of the dam's side of their pedigree, these females being eligible for entry on their milk record performance.

It assists the experts in genetics by providing reliable figures which can be employed in assessing the value of different methods of breeding, and so indicating the most promising methods for stock improvement.

Milk recording should have the active support of every herd owner who desires not only to benefit his own herd, but to contribute towards our knowledge of sound and reliable methods of breeding.

ANALYSES FOR MEMBERS DURING 1932.

By Dr J. F. TOCHER, Aberdeen, Analyst to the Society.

THE number of samples submitted by members for analysis during the year 1932 was 218, of which 45 were fertilisers, 32 were feeding-stuffs, 52 were milks and 44 were waters. There were 24 examinations for poisons and 21 miscellaneous samples. The following table (Table I.) shows the number and nature of the samples analysed during the past six years:—

TABLE I.

	1932.	1931.	1930.	1929.	1928.	1927.
Fertilisers	45	32	34	45	40	44
Feeding-stuffs	32	43	27	34	56	37
Waters	44	53	37	52	50	26
Other samples—						
Milks	97	125	129	72	128	121
Poisons						
Miscellaneous						
Total	218	253	227	203	274	228

FERTILISERS.

General.—The fertilisers examined may be classified as follows:—

TABLE II.

Compound fertilisers	23
Ground mineral phosphates	3
Sulphate of ammonia	3
Basic slags	2
Dissolved bones	1
Potash fertilisers	5
Shell lime	1
Superphosphate	4
Nitro chalk	1
Bone meal	1
Bone meal and dried blood	1
	45

Of the 45 samples of fertilisers analysed, it will be seen that 23 were compound fertilisers, while the remainder included samples of most of the artificials in common use. The average composition of the compound fertilisers analysed during 1932 was found to be 4·70 per cent nitrogen, 7·29 per cent soluble phosphoric acid, 4·23 per cent insoluble phosphoric acid and 6·21 per cent potash. The proportion of nitrogen in the compound fertilisers ranged from 2·14 to 8·60 per cent. The variation in soluble phosphoric acid was from 4·74 to 11·32 per cent, while that of insoluble phosphoric acid was from 1·28 to 8·25 per cent. The proportion of potash varied from 1·26 to 11·91 per cent. The following table (Table III.) shows the results of the analyses of the samples of compound fertilisers analysed during the year :—

TABLE III.

	Nitrogen.	Soluble phosphoric acid.	Insoluble phosphoric acid.	Potash.
Potato manure	6·31	5·92	5·16	6·10
,,	3·12	9·00	2·13	6·22
,,	4·44	7·60	1·81	7·13
,,	8·60	7·03	1·51	7·58
,,	5·68	5·81	3·12	9·59
,,	4·24	7·26	1·85	11·91
Compound manure	6·42	4·74	2·77	11·50
,,	5·68	6·89	3·06	9·39
,,	6·47	6·08	2·67	9·58
,,	7·49	6·64	1·45	8·78
,,	2·35	4·84	16·08	..
,,	2·69	7·10	7·04	2·14
Turnip manure	2·54	7·74	6·33	4·44
,,	2·14	8·44	5·00	4·96
,,	5·29	9·02	4·25	4·33
,,	5·39	6·61	3·97	6·77
,,	2·64	7·94	6·52	1·26
,,	2·89	7·82	6·29	1·82
,,	3·49	5·79	8·25	4·23
Grain manure	3·42	11·32	1·79	3·83
,,	4·94	9·42	1·56	4·43
Grass manure	7·37	6·55	1·28	5·19
Grain and grass manure	4·41	8·09	3·45	5·43

A sample of compound fertiliser without potash contained 2·35 per cent of nitrogen, 4·84 per cent of soluble phosphoric acid and 16·08 per cent of insoluble phosphoric acid. The amount of soluble phosphoric acid which should have been present was approximately one per cent above that found. Since the proportion of insoluble phosphoric acid was correspondingly high there had evidently been a certain amount of reversion of the superphosphate by the mineral phosphate. A special mixture of bone meal and dried blood contained

9·10 per cent of nitrogen and 10·68 per cent of insoluble phosphoric acid. This was a rich fertiliser and worth the money paid for it. Ordinary bone meal usually contains 4 per cent of nitrogen and 20 per cent of phosphoric acid. A sample of shell lime contained 42 per cent of caustic lime, a proportion much below the average. One of the samples of potassic mineral phosphate was below the guarantee in insoluble phosphoric acid, but the deficiency was balanced by an excess of potash. A sample of very dark-coloured bone superphosphate contained 0·89 per cent of nitrogen, 15·69 per cent of soluble phosphoric acid and 0·34 per cent of insoluble phosphoric acid. It was good value on account of the nitrogen it contained.

FEEDING-STUFFS.

Thirty-two samples of feeding-stuffs were analysed during the year, including the usual compound cakes and meals and most of the concentrates in use at the present time.

The following table (Table IV.) shows the composition of the feeding-stuffs analysed :—

TABLE IV.

	Oil.	Albuminoids.	Soluble carbohydrates.	Fibre.	Ash.	Moisture.
Earth-nut cake	9·80	45·50	24·61	6·37	5·00	8·72
,, ,,	8·95	46·50	..	..	..	..
Linseed cake	12·70	27·56	..	..	..	..
,, ,,	8·77	27·25	..	..	..	..
,, ,,	11·43	26·69	..	..	..	..
Ground-nut cake	7·87	24·44	..	..	..	..
Cake	6·15	28·19	38·82	8·90	6·57	11·37
,,	4·96	24·18	..	7·68	..	..
Decorticated cotton cake	12·13	39·37	..	9·75	..	..
Chicken mash	4·50	15·56	..	6·52	..	..
,, ,,	3·90	19·75	..	6·87	..	..
,, ,,	5·12	15·25	..	7·77	..	..
,, ,,	5·33	17·50	..	4·08	4·70	..
,, ,,	5·60	17·06	..	4·37	4·15	..
Bran	3·38	15·19	56·73	9·18	4·72	10·80
,,	3·90	15·75	56·48	8·55	4·70	10·62
,,	3·70	15·62	54·12	8·53	5·20	12·83
Bean meal	1·60	23·82	..	..	..	..
Meat and bone meal	14·98	45·06	..	..	..	4·56
New cow meal	3·06	14·06	56·08	10·26	6·12	10·42
Indian meal	4·63	10·12	70·33	2·00	1·65	11·27
Pig meal	5·60	15·06	..	6·22	..	..
Dairy meal	7·00	23·94	..	8·73	..	..
Oilcake meal	8·66	25·25	40·26	8·67	6·69	10·47
Meal seeds	2·40	4·81	..	22·61	..	..
Feeding cubes	6·74	20·18	..	15·67	..	..
Dairy cubes	7·40	21·75	..	5·83	..	..
,, ,,	7·09	21·69	..	10·54	..	..
Ground barley cockle	1·67	9·75	..	6·10	14·15	..
Coloured ground rice	0·22	7·06	79·04	0·33	0·37	12·98
Dried milk	(Fat)23·09	21·95	..	..	4·83	7·86
Wheat middlings	3·68	13·64	68·23	0·28	2·15	12·02

A sample of a finely milled brownish feeding-stuff was found to consist simply of coloured ground rice, the analysis of which is given in the preceding table. A sample of pig meal was found to be above the guarantee in oil to the extent of 1·60 per cent and below in fibre to the extent of 2·78 per cent and was good value for the price paid for it. A sample of a compound feeding cake was found to be below the guarantee in oil to the extent of 1·26 per cent. Compensation was given for the deficiency. The guarantee received by a member with a consignment of decorticated cotton cake analysed was 51 per cent of oil and albuminoids. It was pointed out that this form of statement was not in accordance with the Fertilisers and Feeding-Stuffs Act, 1926. I have had repeatedly to draw attention to this matter. I have advised buyers to decline to purchase on such a statement and to purchase only on a separate guarantee for oil and a separate guarantee for albuminoids. In the case of decorticated cotton cake, an additional guarantee for fibre must be given. The sample referred to contained 9·75 per cent of fibre, a proportion above the average for decorticated cotton cake. One of the samples of a compound feeding cake contained 2·32 per cent of fibre less than the amount guaranteed, namely 10 per cent. A deficiency in fibre, however, is usually to be regarded as beneficial. A sample of cod liver oil emulsion was found to contain 51 per cent cod liver oil. This emulsion has been on the market for some time as a feeding-stuff for pigs, cattle and poultry, and mixes easily through a wet or dry mash. Cod liver oil does not readily mix with a mash. The emulsion has the further advantage over the oil in being readily assimilated, and is more palatable than the unemulsified oil.

MILKS.

In all, fifty-two samples of milk were received during the year. The number of milks found to be deficient was eleven, being three more than during 1931. Six samples (including one sample—No. 17—of Grade A. milk) were found to be deficient in fat, three in solids-not-fat, and two in both fat and solids-not-fat, when compared with the presumptive limits prescribed by the Ministry of Agriculture. The proportion of butter-fat in the samples varied from the exceptionally low value of 0·95 per cent to the high value of 6·28 per cent, while that of solids-not-fat ranged from 7·84 per cent to 9·40 per cent. The following table (Table V.) gives the results of analyses of 17 samples of milk which were examined both for butter-fat and solids-not-fat.

TABLE V.

No.	Fat, per cent.	Solids-not-fat, per cent.	No.	Fat, per cent.	Solids-not-fat, per cent.
1	6·28	8·62	10	4·40	7·97
2	2·90	8·49	11	4·65	9·19
3	3·30	8·92	12	4·15	8·52
4	3·70	8·56	13	3·55	8·48
5	2·25	7·84	14	2·83	8·70
6	4·05	8·85	15	3·60	8·86
7	2·40	9·07	16	3·45	8·71
8	3·25	8·13	17	3·35	9·40
9	3·65	9·03			

The following table (Table VI.) shows the nature of the distribution of butter-fat and solids-not-fat in these samples :—

TABLE VI.

Butter-fat percentage.	Frequency.	Solids-not-fat percentage.	Frequency.
under 1	1	7·0 to 7·5	. .
1 to 2	. .	7·5 to 8·0	2
2 to 3	6	8·0 to 8·5	3
3 to 4	18	8·5 to 9·0	8
4 to 5	12	9·0 to 9·5	4
5 to 6	. .	9·5 to 10·0	. .
6 to 7	1		
	38		17

WATERS.

Forty-four samples of water were analysed and 34 were passed as fit for domestic use. Three samples were unfit for use, owing to the fact that they contained dissolved lead. Continued use of such water would cause lead poisoning. In several cases a specially coated piping was recommended as an alternative to the installation of neutralising plant. Two waters which contained large amounts of mineral matter, including salts, giving rise to temporary hardness, were recommended to be used only for drinking purposes. A comparatively soft water which had been conveyed in a galvanised iron pipe was found to contain traces of zinc in solution and to have a distinct action on that metal when tested on a piece of zinc-coated pipe. It is better in such a case to use ordinary cast-iron pipes.

POISONS.

Twenty-four examinations for poisons were made in feeding-stuffs and in the stomach contents of farm animals. Arsenic was found to be the cause of death of a horse, while lead was found to have caused the death of a heifer. A sample of paint sent in connection with this case was found to contain basic carbonate of lead or white lead. Strychnine was found present in sufficient amount to have caused the death of a valuable sheep-dog. Specimens of plants were identified as the Lesser Spearwort. The plants were found on analyses to contain natural organic compounds which were found on being used to be poisonous to livestock. I therefore reported that the cause of death of two bullocks was poisoning by Spearwort. The plant was found in the stomachs and intestines of these animals. Several samples of linseed cake and earthnut cake were examined for castor bean with negative results. Two samples of linseed cake were found to contain castor seed, which readily causes death among farm animals. Samples of linseed cake were examined for the presence of cyanogenetic glucosides. While hydrocyanic acid in amounts from 0·027 per cent to 0·049 per cent was developed in several samples, it was not found possible to state with any degree of confidence what amount of glucoside would prove dangerous to livestock. The lethal dose is being tested under my supervision on livestock.

MISCELLANEOUS.

All users of cod liver oil know how unsatisfactory it is to incorporate it either in a wet or dry mash. It will not mix with water or skim milk or throughout a dry mash. In the case of a wet mash, the oil floats upon the surface, and, in the case of a dry mash, it remains in clots throughout the feed. This difficulty can be got over if cod liver oil is used in the form of an emulsion prepared by a process known as homogenisation, in which the oil is passed through a disintegrating and emulsifying mill. Some users of cod liver oil have been accustomed themselves to make a crude emulsion on the farm by adding lime-water to the oil. Cod liver oil emulsion has now been, however, for some time on the market as a feeding-stuff for pigs, cattle and poultry, and this preparation will be found to mix easily throughout a wet or a dry mash, so that the animals to which it is fed will each be assured of getting the proper proportions of oil. The emulsion will remain stable indefinitely, provided it is kept free from frost. The oil contains the valuable vitamins A. and D., and it is well known that, when given in the form of an emulsion, cod liver oil is more easily assimilated and is more palatable than the ordinary unemulsified oil.

A sample of butter was found to be of good colour and texture but to have a slightly rancid odour and sour taste owing to the presence of excess free fatty acid. A sample of silage prepared from Italian Rye-grass was analysed with the following results: oil, 0·46 per cent; albuminoids, 1·43 per cent; soluble carbohydrates, 11·28 per cent; fibre, 7·17 per cent; mineral matter, 1·94 per cent ; and moisture, 77·72 per cent. The sample contained 16 food units as against an average of 23 food units from samples analysed by me. Samples of ordinary silage and a silage treated by a special process are being analysed in order to ascertain whether or not the specially treated silage is the more valuable. Their relative merits as feeding-stuffs are also being tested at the Rowett Institute. Two samples of 'Cow Lick' were found to contain over 90 per cent of common salt. Carbonate of lime and phosphate of lime formed the chief part of the residual minerals found to be present. Both of the 'Licks' contained small traces of iodine, amounting, in one case, to one-half part per million, and, in the other, to 3 parts per million. Other samples under this heading included sheep dips, worm medicines and a German mercurial dressing for application to seed. This mercurial dressing was found to contain 3·57 per cent of an organic compound of mercury. A home product of similar composition is now on the market, and I understand is being sold at the same price as the German preparation.

A new process of conserving green fodder is being used in Finland whereby the losses due to fermentation and respiration inherent in making silage are claimed to be eliminated. The losses under this process are claimed to be less than 5 per cent as against an estimate of about 30 per cent in hay. The new process consists in raising the acidity of the silage by the addition of certain dilute acids to the mass and by excluding air, thereby securing that the composition of the chief constituents is unaltered. Experiments on green food treated by the Finnish process are being carried out at the Rowett Institute and at Jealott's Hill, using the same fodder throughout for hay silage and the specially treated green food. Waste lime in the form of dried carbonate of lime is now on the market, and is sold at 15s. per ton exclusive of carriage. The proportion of calcium carbonate present in recently analysed samples is slightly over 80 per cent.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1932.

THE following comparison of the cereal and other crops of 1932 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled :—

EDINBURGH DISTRICT.

MID-LOTHIAN. *Wheat*—48 bushels per acre; straw 40 cwt.; 4 bushels sown. *Barley*—54 bushels per acre; straw 20 cwt.; 3 to 4 bushels sown. *Oats*—64 bushels per acre; straw 25 cwt. *Harvest*—One week earlier than last year. *Hay*—55 cwt. per acre; good quality. *Meadow Hay*—None grown. *Potatoes*—7 to 8 tons per acre early varieties; 9 tons per acre late varieties; no disease. *Turnips*—18 to 20 tons per acre; only one sowing necessary in most cases. *Insects*—No damage by insects. *Weeds*—No injury to any extent. *Pastures*—Fair average growth and good quality. *Live Stock*—Seemed to do well. Cattle and sheep free from disease. *Clip of Wool*—Good; about average.

WEST LOTHIAN. *Wheat*—40 bushels per acre; straw good; grain in good samples; seed sown, 4 bushels per acre broadcast and 3 to 3½ bushels per acre drilled. *Barley*—40 bushels per acre; straw and grain of good quality; seed sown, 3½ to 4 bushels per acre. *Oats*—50 to 54 bushels per acre; straw and grain of good quality; seed sown, 6 bushels per acre broadcast, 5 bushels where drilled; new varieties, 3½ bushels per acre. *Harvest*—Began almost a fortnight earlier than the previous year; approximate period of harvesting operations 3 to 4 weeks; shortest harvest for many years. *Hay*—2 tons per acre; excellent quality; an ideal hay harvest. *Meadow Hay*—Not extensively grown. *Potatoes*—Earlies, 8 to 10 tons per acre as compared with 6 tons last year; main crop, 10 tons per acre as compared with 7 tons last year; free from disease; no new varieties planted. *Turnips*—13 to 18 tons per acre; where sown early a good crop; later sowings suffered from drought; good brairds all over; only a few resowings. *Insects*—Less injury than usual; use of 'Ceresan' and other seed dressings considered beneficial, as brairds came away faster; a few fields of lea crop damaged by leather-jacket. *Weeds*—No injury to any great extent; were easily kept down owing to favourable weather. *Pastures*—Pastures good but suffered from dry weather; less in average growth, but quality better. *Live Stock*—Stock throve well. Cattle and sheep comparatively free from disease; less lame sheep than usual. *Clip of Wool*—Average clip and good quality.

EAST LOTHIAN (UPPER). *Wheat*—Above an average in quantity and quality; from 45 to 48 bushels per acre; quality the best for many years; the use of 'Ceresan,' where adopted in dressing the seed, has reduced the seeding by at least 1 bushel per acre; 3 bushels is now sufficient. *Barley*—One of the best crops for many years both as regards quantity and quality; the average would be 55 to 60 bushels per acre, and the quality was what is desired for malting purposes; seeding, 3 bushels per acre. *Oats*—Similar to the wheat and barley crops as regards quantity and quality; there were a few exceptions where the crop was grown after old lea and where the seed was not treated with 'Ceresan'; the crop was badly damaged by wire-worm; seed now required, 4½ bushels per acre. *Harvest*—The harvest started a week earlier than usual. *Hay*—A full average; 2½ tons per acre, and the quality of the best. *Meadow Hay*—None grown. *Potatoes*—Yield was double that of last year; 8 to 10 tons, with no blight; no new varieties. *Turnips*—Crop varied more than any of the others; finger-and-toe again damaged many crops, especially where late sown; 20 tons per acre where free from disease; crop braided well and no resowing. *Insects*—No damage done. *Weeds*—No more than usual. *Pastures*—A full average and stock did well. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—An average in most cases.

East Lothian (Lower). *Wheat*—40 to 64 bushels; average about 48 bushels per acre; an exceptionally good crop; harvested in first-class order, with the result that it was practically all of millable quality; straw about 2 tons per acre; seeding, 3 to 3½ bushels up to 4 bushels per acre in the later sowings. *Barley*—A very good crop, but a good deal of it lodged before fully ripe, and this impaired quality for malting, with a result that there were fewer choice consignments; threshed well, and yields of 56 bushels per acre and over were quite common on good barley land; there was also a good yield of straw; seeding, 3 to 3½ bushels per acre. *Oats*—A moderately bulky crop, but not too bulky, and has threshed extraordinarily well; 80 to 90 bushels per acre not uncommon under good cultivation, and the quality good. *Harvest*—Harvest began in the latter part of August, being rather earlier than usual, and, the weather being good, was relatively short and without difficulty; the crops were only just secured when the weather broke. *Hay*—A good crop; up to 3 tons per acre; quality good, but the price so bad that the hay crop has almost ceased to be of interest for sale. *Meadow Hay*—None grown. *Potatoes*—Yield in many cases was double that of last year; 10 tons per acre was common; the tubers were very large—so large that many of them were of unmarketable size; the proportion of seed, the only part of the crop worth a little money, was small; there was not much blight, but the weather was wet at lifting time, which was responsible for some rotting in pits. *Turnips*—Not a heavy crop, although better than last year; late in the winter the residue of the crop was badly damaged by frost, it not being the practice to store the roots or adopt the protective measures found necessary in other parts of the country; the crop brairded all right, and there was little or no resowing; the dry weather at midsummer stunted the crop. *Insects*—No injury. *Weeds*—Conditions were quite normal in this respect. *Pastures*—Pastures were good, and of good quality, but got rather eaten down in the dry summer weather. *Live Stock*—Stock throve all right, but prices were bad for all kinds. Cattle and sheep free from disease. *Clip of Wool*—Good; about an average.

BORDER DISTRICT.

Berwickshire (Merse). *Wheat*—After a steady drop in sowings, 1932 showed an increase of some 240 acres, giving an area practically similar to that of 1927. While seeding time was propitious, the more likely reason for an increase was the lack of demand for barley. Brairds came away nicely, except those sown towards the end of November. Immediately thereafter the land got badly battered by rainstorms of great severity. The winter was open, followed by a wet cold May, which did material damage. Yield of grain disappointing, up to 40 bushels, all millable quality; natural weight 62 lb.; straw good of moderate length, 26 to 30 cwt. per acre; usual seeding, 4 bushels per acre. *Barley*—Again shows a further reduction of over 1100 acres, and is now little over one-third of the acreage in the peak year 1920. Seeding time was catchy, often hindered by rain. Despite the want of frosts the land worked well. Brairds fairly regular and growth in June good. Ears late in appearing—round mid-July; progress slow up to the last week, when ripening took place practically in 48 hours, resulting in much becoming over-ripe and suffering shake. The crop was mostly harvested before the weather broke in October. The yield was a full average up to 44 to 46 bushels of good quality grain. Natural weight, 52 lb.; straw brittle, about 23 cwt. per acre; seeding, 3 to 3½ bushels. *Oats*—With an increase of 2200 acres over 1931, and rather more than 1927, it would almost appear as if the minimum acreage had been reached. Sowings began early in February on light lands, such lands then being in fine order; conditions afterwards were not so favourable; sowings protracted, while a number of the early sown fields suffered considerably, some requiring to be resown or ploughed up. 'Ceresan' dressing was in general use for the first time, and proved to be quite all that is claimed for it in affording a healthier braird. Conditions affected the crop much the same as barley, ears late in appearing, ripening slow until the very end, when much was broken down, suffered severe shake, and was difficult to cut. The great proportion of crop was led in good condition, and was of fine quality; the remainder suffered considerably. Yield, 34 to 50 bushels; natural weight, 43 lb.; straw only fair quality, up to 26 cwt. per acre. *Harvest*—Into September before harvest was general, 10 days or so later than is general. A fine month, and much grain was carried without more than a shower falling on it. By October the conditions materially altered, causing delay, and a considerable acreage had to remain out until the end of the month, deteriorating considerably, though sprouting was not so prevalent as sometimes occurs. *Hay*—Hay time generally was favourable, some excellent fodder being secured with the minimum of work; about 30 cwt. per acre; was well mixed with clovers. The aftermaths were strong and looked to be good, but apparently were too fresh grown, as lambs did not make much progress when grazing them. *Meadow Hay*—Not quite so favourable conditions as the hay crop, but did not suffer serious damage; cutting was difficult and somewhat protracted, accounting for the over-ripening of some crops; yield about 26 cwt. per acre. *Potatoes*—A jump of over 300 acres is a large increase in a total acreage always well below the 3000 mark. Seed planted in good time and condition; growth strong from the commencement, despite the dry and hard condition of the land; weather conditions delayed lifting, and the crop was pitted mostly in a wet and dirty condition; practically free from disease, though very little spraying was done; the crop was a good one, of good-sized tubers; average, 7 tons or more per acre; no new varieties. *Turnips*—Late April and all May were wet and cold, when it was difficult to get land in condition for working; much of the stronger lands could not be touched until June; resowing was the exception; plants mostly came well away and quickly to the hoe; later there was a want of luxuriance about the shaws with the exception of some early sown swedes; many fields early showed signs of finger-and-toe, which ultimately proved exceedingly prevalent, curtailing yields enormously, both in swedes and yellows; otherwise the crop was good, roots being of fair size, having swollen out considerably all autumn. Yellows were from 10 to 18 tons, and swedes 16 to 24 tons per acre. Against a greater tonnage than last year, there was an all over reduction of over 800 acres, the total, just under 17,000 acres, being probably the lowest ever recorded. *Insects*—No material damage. *Weeds*—Charlock was prevalent, though not more than usual in many of the earlier sown grain fields, whereas the seed was sprung before the later fields were sown and the plants killed in working. *Pastures*—In early spring pastures were forward and very good; in April and May they became bare; thereafter growth was fair up to July, when things came with a rush; plenty bulk and roughage for autumn purposes; coupled with the open season a deal of turnip feeding was saved. *Live Stock*—Old cattle grazed well; young stock not too good. Lambs made slow progress at first; the lambing time was bad, except for the early flocks; afterwards leeway was made up and they came to market in average condition. The crop of lambs was exceptionally large; losses about average. Cattle and sheep free from disease. *Clip of Wool*—An average clip both as to quality and weight.

BERWICKSHIRE (Lammermoor). *Wheat*—Practically none grown. *Barley*—A very much reduced acreage of barley now being grown; full average yield of good quality grain, say 36 bushels per acre; seed 3 to 3½ bushels per acre. *Oats*—Yield well up to average, and quality good; a considerable amount of laid grain, but in most cases harvested without undue expense and only slight damage to quality; yield around 48 bushels; seed from 4 to as high as 6 bushels per acre. *Harvest*—Started at the usual time; fairly good weather, and crops gathered without undue expense or delay. *Hay*—Full average crop, secured in good condition; yield about 2 tons. *Meadow Hay*—Rather more productive than last year and well secured; yield around 30 cwt. *Potatoes*—Yield very much better than last year; practically no disease; no new varieties of note planted. *Turnips*—A full average crop of sound turnips; about 20 tons per acre; swedes also a good crop; brairded well and very little resowing; finger-and-toe less in evidence than last year. *Insects*—Very little damage. *Weeds*—Weather very suitable for cleaning operations, and weeds did not cause much injury to crops. *Pastures*—Average growth and quality; much better than last year. *Live Stock*—Stock throve well, lambs coming to the markets in better condition than last year. Cattle and sheep were, on the whole, free from disease. *Clip of Wool*—Average clip.

ROXBURGHSHIRE. *Wheat*—Not much grown, but there has been a small increase in acreage. *Barley*—Less grown, probably the smallest acreage for a very long time. A good crop, though pretty badly laid; 36 bushels; quality variable; seed 3 bushels; the use of 'Ceresan' as a seed dressing was widely practised with satisfactory results. *Oats*—A heavy crop; badly lodged in many cases; seed 4 to 5 bushels, though where seed dressed with 'Ceresan' a lighter seeding was found satisfactory. *Harvest*—Harvest began a week earlier than usual, but bad weather delayed cutting; corn got too ripe and broke down, making cutting difficult, and leaving a great deal of grain on the ground. *Hay*—A much lighter crop than last year, but very good quality; most of the crop was got in good order. *Meadow Hay*—A light crop; the early cuts were well got, the later spoilt by rain. *Potatoes*—An exceptionally heavy crop; no disease; 10 to 14 tons per acre. *Turnips*—Where not spoilt by finger-and-toe, crop was very good, but finger-and-toe much more prevalent than usual; late sown turnips were more free from the disease; crop brairded unevenly but grew well. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Grass was later in coming, owing to cold, and was not so plentiful as last year, though probably of better quality. *Live Stock*—Cold spring was unfavourable; lambs latterly did fairly well; owing to reduced use of artificial feeding, lambs tended to lack the finish of last year. Cattle and sheep were free from disease, though there was a certain amount of contagious abortion and bovine tuberculosis. *Clip of Wool*—An average clip.

SELKIRKSHIRE. *Wheat*—None grown. *Barley*—Practically none grown. *Oats*—Were sown under ideal conditions, brairded well, and harvested a splendid crop, the grain being well filled and the straw of fine quality; 45 bushels per acre; 25 cwt. straw; seed sown 5 to 6 bushels per acre. *Harvest*—Harvest commenced about the first week of September and, where crop standing, was quickly handled and secured in first-class order; lea oats, after wild white clover, were badly laid and difficult to cut, but were mostly got in in fair condition. *Hay*—A very good crop, and got in with a minimum of labour; splendid quality; about 2 tons per acre. *Meadow Hay*—A good crop, of excellent quality, and well got; about 1 ton per acre; hill hay also a good crop. *Potatoes*—Well above the average, 2 or 3 tons per acre more than last year; about 8 tons per acre; very little disease. *Turnips*—Were got in in good order, came quickly to the hoe, and, with favourable weather continuing right into the autumn, the crop all over was a big one; finger-and-toe disease fairly prevalent. *Insects*—No damage by insects. *Weeds*—No damage. *Pastures*—The warm season was favourable for pastures. *Live Stock*—Stock throve quite well, but lambs lacked condition of previous years. Cattle and sheep free from disease. *Clip of Wool*—Average clip of good quality.

PEEBLESSHIRE. *Wheat*—Very little grown. *Barley*—None grown, so far as known. *Oats*—A very irregular crop; in all good districts, especially after lea, an exceptionally good crop; from 48 to 60 bushels per acre; in many cases, after turnips, the crop was a disappointing one; from 20 to 28 bushels per acre; straw about an average, and would work out about 1 ton to 40 bushels grain. *Harvest*—Harvest commenced about 1 week earlier than usual. *Hay*—Ryegrass hay, where saved in time, turned out a good crop; from 34 to 38 cwt. per acre; on light land, and where eaten by sheep well into January, a poor crop; from 18 to 22 cwt. per acre, and generally seemed in splendid order. *Meadow Hay*—An average crop, and well got as a rule. *Potatoes*—An exceptionally heavy crop and of excellent quality; free from disease. *Turnips*—Turnips sown before the time brairded and came away well; those late sown were very slow to come away and some resowing had to be done, and there would not be an average crop; on some farms finger-and-toe was prevalent. *Insects*—No injury. *Weeds*—No injury. *Pastures*—On well farmed land were very much above the average, both for quality and growth. *Live Stock*—Stock throve well. Cattle and sheep free from disease. *Clip of Wool*—Heavier than last year and quality good.

DUMFRIES DISTRICT.

DUMFRIES (Annandale). *Wheat*—None grown. *Barley*—Except for a very small acreage in one or two isolated cases, the growing of this cereal has been given up. *Oats*—Sowing began during the last week in February, but was not general until about 12th March. The conditions were ideal and continued so through the spring, the young braird coming away strong and healthy with very little damage done by grub. Average yield, 40 bushels per acre. Owing to the very extensive use of 'Ceresan,' from 1 to 2 bushels less seed was sown per acre. *Harvest*—Started about the middle of August under ideal conditions. Some of the earlier farms secured a few stacks of excellent quality, but the weather broke down about the end of August, and for over a fortnight work was at a standstill. Conditions were the worst experienced for many years, and the quality of both grain and straw was very poor owing to sprouting and discoloration. The laborious work of continually shifting the stooks resulted in a very heavy loss of grain. Harvest finished about the end of September. *Hay*—The hay crop was about the same as last year, but the quality was much better, the weather conditions during hay time being good; about 30 cwt. per acre. *Meadow Hay*—About an average both as to quality and quantity; 28 cwt. per acre. *Potatoes*—One of the best crops for a number of years and the quality excellent. The conditions through the spring and summer were good, and damage caused by blight and disease was very slight; about 7 tons per acre; no new varieties reported. *Turnips*—Favoured by very good weather in September and October, were a good average crop. The seed brairded well, and hoeing began about the end of May under favourable conditions; 20 tons per acre. *Weeds*—A great many turnip fields suffered from a dearth of both horse and hand labour; this can be attributed to the continued high cost of labour compared with the low prices of all farm produce. *Pastures*—These were very good, and stock of all kinds throve well. The summer being good, with bright sunshine well above the average, lambs and young cattle were marketed in better condition than last year, but the prices were disastrous. *Grazing Season*—This was a good deal longer than last year owing to the very mild weather during October and November, and wintering cattle were doing well right up to the middle of December without any hand feeding. Cattle and sheep were reported to be wonder-fully free from disease. *Clip of Wool*—Above the average; quality good.

DUMFRIES (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Well got and a good crop; threshed very well; much better than last year. *Harvest*—About a fortnight earlier than usual. *Hay*—A good crop; fairly well got; a very chancy hay time. *Meadow Hay*—A very good crop; late meadow hay very well got. *Potatoes*—About 5 to 6 tons per acre; free from disease. *Turnips*—Generally a very good crop; about 20 tons to the acre; brairded well; no resowing; fairly free from weeds. *Insects*—No injury. *Pastures*—Were very good; better than last year; more feeding value in the grass. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—About an average; much better than last year.

DUMFRIES (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—All over a fairly good crop; about 30 to 35 bushels per acre; quality of straw good and more bulk than last year; seed sown, where dressed with 'Ceresan,' 5 bushels per acre, not dressed about 6 bushels per acre. *Harvest*—About usual time. *Hay*—Ryegrass hay rather light crop, about 28 to 30 cwt. per acre, but nearly all got in very good condition. *Meadow Hay*—Light crop to start with; crops which were late in being cut on account of wet weather were very heavy, and were got in very good condition. *Potatoes*—Not so good as last year; a lot of bad potatoes, probably caused by too much wet weather. *Turnips*—Heavier than last year; the crop did not braird well; some resowing. *Insects*—No damage by insects. *Weeds*—Not many weeds, except redshank where turnips were slow in coming. *Pastures*—Average growth and quality; better than last year. *Live Stock*—Stock throve very well in pastures. Cattle and sheep exceptionally free from disease of all kinds. *Clip of Wool*—About average both for weight and quality.

KIRKCUDBRIGHTSHIRE. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop; better than last year by 20 per cent; yield, 20 cwt. per acre; straw, 30 cwt. per acre. *Harvest*—Commenced somewhat earlier than usual, but was protracted, and finished about usual time. *Hay*—A good crop, about equal to last year, and considerably over average; saved in excellent condition; clover abundant; 2 tons per acre where once cut. *Meadow Hay*—An increase upon last year, and well saved. *Potatoes*—Earlies suffered from a June drought and were accordingly delayed, but pulled up later and eventually raised a fine crop; about 8 tons per acre; there was some disease in crops not saved before 1st August. Late varieties yielded a heavy crop, 30 per cent over last year; about 9 tons per acre; no new varieties. *Turnips*—Brairded well and no resowing; good growth throughout and a heavy yield; 25 per cent over last year; about 25 tons per acre. *Insects*—No damage by insects. *Weeds*—Damage by weeds less than usual, the season being favourable for cultivation. *Pastures*—Pastures started late but were generally good; not nearly so abundant as last year, but of much better quality. *Live Stock*—Stock throve well. Cattle and sheep free from disease.

WIGTOWNSHIRE. *Wheat*—Very little grown. *Barley*—Very little grown, but where sown the yield would be above 40 bushels per acre; seed 4 bushels per acre. *Oats*—Lea oats, 40 bushels per acre; oats after green crop, 44 to 46 bushels per acre; seed—potato oats, 5½ to 6 bushels where broadcasted, 4 to 5 bushels where drilled; large varieties, 7 to 8 bushels per acre; in some cases where 'Ceresan' was used with potato oats, 3 to 3½ bushels per acre gave quite good results. *Harvest*—Harvest began a few days earlier than in 1931. A good deal of lea oats were sown in early spring and got a good seed bed, and as many were using 'Ceresan' as well, this would explain the earliness of harvest. Those who cut early got ten days of very bad weather for lea oats in stook, and those who had not lea oats cut had them battered to the ground. Lea oats were badly laid, but sown-out oats stood fairly well. As September advanced the weather improved, and oats were generally stacked in good order. *Hay*—Early cut hay was got in fine order, but hay cut later met with broken weather and was more difficult to get. The quality all over would be better than last year but the quantity was less; about 30 cwt. per acre. *Meadow Hay*—Better quality but less in quantity than last year. *Potatoes*—Early potatoes were a very light crop when digging started, want of rain being the cause to some extent, but they improved later to 8 tons per acre. Epicures were mostly planted. Late potatoes were a better crop than in the previous year, and while there was disease on some farms other places were fairly clear; 8 to 10 tons per acre. *Turnips*—18 to 20 tons per acre; where turnips were sown early in May the braird was good, but dry weather set in, and as the land got very dry those sown later showed a poor braird and in some cases never appeared. A considerable amount of resowing was necessary owing to this, or owing to the effect of early morning frost on the braird. The crop grew well; there was not much finger-and-toe disease, but many crops suffered from rot. *Insects*—Damage by insects was less than usual. *Weeds*—Redshank was very common in turnips by September; the wet weather would partly account for this; docks and thistles were prevalent, the former being on the increase. *Pastures*—Average growth and quality; on light land the dry weather in June checked the grass and burned it in patches, but it came again in July. *Live Stock*—Stock throve well. Rather less foot-rot in sheep and a little more hoose among calves. *Clip of Wool*—Quality usual; quantity better.

GLASGOW DISTRICT.

AYRSHIRE. *Wheat*—45½ bushels per acre, weighing 63 lb. per bushel; straw, 30 cwt. per acre; seed, 3½ bushels per acre; grain of good quality. *Barley*—34 bushels per acre, weighing 56 lb. per bushel; straw, 24 cwt. per acre; seed, 3½ bushels per acre; grain of fair quality. *Oats*—49 bushels per acre, weighing 40 lb. per bushel; straw, 28 cwt. per acre; seed, 5½ to 7 bushels per acre. *Harvest*—Harvest began ten days earlier than usual and continued till about the end of September. The weather was unfavourable, and considerable quantities of grain, especially oats, were discoloured in the stook. In sheltered situations sprouting of the grain in the stook was common, rendering the grain unfit for seed purposes. *Hay*—Average quantity, about 1 ton 15 cwt. per acre ; secured in moderate condition. *Meadow Hay*—From 44 to 48 cwt. per acre ; secured in variable condition after prolonged efforts. *Potatoes*—About 8 tons per acre, of good quality ; disease was prevalent towards the latter end of the season, but the loss was much less than in the previous year ; a few new varieties were grown, but the result was not very encouraging. *Turnips*—Gave promise of a good crop early in the season, but did not bear this out as the season advanced, and lifted only a moderate crop ; about 20 tons per acre ; brairded well, and little resowing was necessary. Dry-rot, canker and finger-and-toe seemed to be the cause of failure of many crops. *Insects*—Late in the season rust attacked oats to a considerable extent. *Weeds*—Not more damage than usual. *Pastures*—Pastures generally were good. *Live Stock*—On the whole, stock made good progress during the season, but in many cases were sold in the autumn at a lower price than they cost in the spring. Cattle and sheep free from disease. *Clip of Wool*—The quality was good, and the weight of clip would be above the average of recent years.

BUTE. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop ; in most cases laid more than last year ; seed, 5 to 6 bushels per acre, according to variety. *Harvest*—Started a little earlier than last year ; began cutting on 23rd August and finished on 16th September ; cutting was protracted on account of broken weather and laid crops ; a lot of cutting had to be done by the reaper ; carting-in finished about 27th September ; kept well in the stack. *Hay*—1½ tons per acre ; quality good ; many made pastures of their hay crop this year. *Meadow Hay*—Very little grown ; quality good. *Potatoes*—Early potatoes (Epicure) were ready for digging a little earlier than last year ; began digging on 15th June ; a good crop ; about 6 tons per acre ; Kerr's Pink (late variety) a very good crop ; about 8 tons ; very little disease ; no new varieties. *Turnips*—A good crop in general ; over 20 tons per acre ; brairded well ; no second sowing. *Insects*—No injury by insects. *Weeds*—No injury by weeds. *Pastures*—Average growth, and quality quite good. *Live Stock*—Stock did well on pastures. Cattle and sheep free from disease—no epidemic of any kind. *Clip of Wool*—Quality and quantity good.

ARRAN. *Wheat*—None grown. *Barley*—None grown. *Oats*—About 40 bushels per acre ; very good crops, but much damaged by bad weather ; seed generally sown, 5 to 6 bushels per acre. *Harvest*—Harvest began a week earlier than last year. *Hay*—About 2 tons per acre. *Meadow Hay*—Same as last year. *Potatoes*—About 6 tons per acre ; little disease ; double the acreage grown. *Turnips*—Good crop and free from disease ; brairded well ; no resowing. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Good pastures. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Wool clip same as last year ; prices poor.

LANARKSHIRE (Upper Ward). *Wheat*—Only small quantities grown. *Barley*—Only small quantities grown. *Oats*—55 to 65 bushels per acre; much better than last year; quality of grain and straw very good. *Harvest*—Began a week earlier than last year; weather was fairly good, with the exception of one week which delayed cutting. *Hay*—35 to 50 cwt. per acre; an excellent crop, well secured, but no market for it; prices very low; aftermath very poor. *Meadow Hay*—An average crop and well secured. *Potatoes*—8 to 10 tons per acre; an excellent crop; free from disease; prices very low; a few acres of Dunbar Cavalier a nice crop. *Turnips*—25 to 30 tons per acre; a better crop than last year; a little finger-and-toe; brairded well; no resowing. *Insects*—Very little damage by insects. *Weeds*—Weeds not so bad as last year, but charlock appeared to be increasing. *Pastures*—Were very good and of full average growth; lasted well into autumn. *Live Stock*—Throve well, but left no margin for summering. Cattle and sheep free from disease. *Clip of Wool*—Good and of average quality; price much less.

LANARKSHIRE (Middle Ward). *Wheat*—34 to 38 bushels per acre; better than last year; straw, 25 cwt. per acre; seed—English, 3 to 3½ bushels, and Scotch, 3½ to 4 bushels. Less seed is now required on account of treatment with 'Ceresan.' *Barley*—None grown. *Oats*—50 to 53 bushels per acre; straw, 25 cwt. per acre; sample of grain good; straw well got, making good fodder. Seed, 5½ to 6 bushels per acre, according to variety. Less seed required on account of use of 'Ceresan.' *Harvest*—Began about the middle of August; from a week to ten days earlier than last year. *Hay*—30 to 40 cwt. per acre; quality very good and superior to the 1931 crop. *Meadow Hay*—Weight similar to 1931, but quality much better. *Potatoes*—8 to 10 tons per acre, which is at least 3 tons per acre better than last year. Crop free from disease where spraying was practised. Small areas of second early varieties slightly touched. Disease, where existed, started about the middle of July. No new varieties grown to any extent. *Turnips*—Good crop on all classes of soil; from 20 to 25 tons per acre; crop kept well in pits; brairded well, and practically no resowing. *Insects*—No loss from insects or other pests. *Weeds*—As a result of the exceptionally favourable season, crops were kept free from weeds, and the soil was left in an exceptionally clean state when the crops were removed. *Pastures*—Grazed exceptionally well. *Live Stock*—Both cattle and sheep made good progress during the grazing season. Cattle and sheep free from disease. *Clip of Wool*—Very few sheep kept, but clip of wool would be about average.

LANARKSHIRE (Lower Ward). *Wheat*—35 to 38 bushels per acre; better than last year; straw, 25 cwt. per acre; seed—English, 3 to 3½ bushels, and Scotch, 3½ to 4 bushels. Seed now being reduced on account of use of 'Ceresan.' *Barley*—None grown. *Oats*—50 to 55 bushels per acre; straw, 25 cwt; grain and straw both very good quality; seed from 5 to 6 bushels per acre, according to variety. Seed reduced on account of the use of 'Ceresan.' *Harvest*—Commenced about middle of August, or approximately a week earlier than last year. *Hay*—Ryegrass, 35 to 40 cwt. per acre; slightly less than 1931, but the quality much superior. *Meadow Hay*—Weight similar to 1931, but quality superior. *Potatoes*—8 to 9 tons per acre, or approximately 3 tons more than last year; very free from disease, especially where spraying was practised; no new varieties grown; generally kept well in pits where lifted under normal conditions. *Turnips*—Good crop on all classes of soil; from 20 to 25 tons per acre; kept well in pits; brairded well and practically no resowing. *Insects*—No damage from insect pests, but mildew appeared in several areas; damage only slight. *Weeds*—Owing to the dry season weeds were easily destroyed; consequently no damage suffered by crops; land left in clean state. *Pastures*—Grazed exceedingly well, and much better than last year. *Live Stock*—Feeding cattle and sheep made good progress during the season, and dairy stock milked well. Both cattle and sheep were free from disease. *Clip of Wool*—Very few sheep kept, but clip of wool would be about an average.

RENFREWSHIRE. *Wheat*—A good crop, both as regards grain and straw; rather above average in quantity and quality; grain about 28 cwt. per acre; straw about 32 cwt. per acre; seed sown, 3 to 4 bushels per acre. *Barley*—None grown. *Oats*—A very good crop; yield of grain and straw above average and quality good; grain about 25 cwt. per acre; straw about 30 cwt. per acre; seed sown, 4 to 6 bushels per acre. *Harvest*—Harvest began rather earlier than usual; the weather, on the whole, was favourable, and crops were secured in good condition. *Hay*—A good crop, well secured, and quality above average; from 30 to 40 cwt. per acre according to district. *Meadow Hay*—Very little now grown. *Potatoes*—A very good crop, with yield above average, varying, according to locality, from about 6 to 12 tons per acre; disease not prevalent; hoeing operations carried out under very favourable conditions, with consequently little trouble from annual weeds. *Turnips*—Above average in both quantity and quality; little resowing required; thinning and cleaning operations were carried out under favourable conditions. *Insects*—Little or no damage reported. *Weeds*—Crops suffered exceptionally little damage from weeds, on account of the very favourable conditions for carrying out cleaning operations. *Pastures*—Pastures were of average growth, with quality better than last year. *Live Stock*—Stock generally did well on pastures. Cattle and sheep free from disease. *Clip of Wool*—About average quality.

ARGYLLSHIRE (Lochgilphead). *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop; grain 26 to 30 bushels per acre; straw 20 to 25 cwt. per acre; seed 5 to 6 bushels according to variety. *Harvest*—Began 10 days earlier than usual, and finished in good time. *Hay*—Ryegrass hay was a light crop owing to deficiency of rain in May and June; it was, on the whole, well secured, but did not average more than 1 ton per acre. *Meadow Hay*—About the same bulk as last year, but not so well secured. *Potatoes*—A very good crop; 7 to 8 tons per acre; quality excellent. *Turnips*—Brairding was slow and uneven owing to the very dry weather in May and June, and there was some resowing; on the whole, the crop turned out better than was anticipated, the backend of the season being very favourable for growth; about 20 tons per acre. *Insects*—Did not damage crops to any extent; turnips suffered somewhat from 'fly' during the dry spell in May and June.

Weeds—Were less troublesome than usual; the dry weather in the early summer made it possible to keep them down. *Pastures*—Rather bare at the beginning of the season, but lasted out well. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—Average.

ARGYLLSHIRE (Kintyre). *Wheat*—Total area under wheat, 4 acres; yield from this, 6 tons 6 cwt. of grain—*i.e.*, not less than 56 bushels (at 63 lb. per bushel) per acre; seed sown, in November, 4 bushels per acre; a very heavy crop; soil good deep loam. *Barley*—None grown. *Oats*—Rather less bulk of straw, but threshed particularly well; yields reported up to 30 cwt. per acre; a good average estimated at 20 to 25 cwt.; seed sown generally 5 bushels (broadcast) per acre; much of the grain was discoloured by weathering in the stook. *Harvest*—Harvest commenced about usual time, but was prolonged by onset of damp muggy weather for about three weeks. *Hay*—Yields rather lighter than in previous season, due to severe drought in June; early cuts suffered from weathering; later cuts secured in good condition; about 30 cwt. per acre. *Meadow Hay*—On the whole scarcely so productive as in preceding year; about 30 to 35 cwt. per acre; condition of crop when secured good. *Potatoes*—Heavier crop than last year; yields up to 10 tons per acre, averaging out at 7 to 8 tons; despite evidence of early blight, crops in the pits kept well. *Turnips*—Scarcely so heavy as in previous year; crops irregular, some doing very well, while others were light; brairding slow due to dry conditions; one or two instances of resowing due to drought and insect attack; yields very irregular, from 15 tons to well over 30 tons per acre; average crop about 24 tons; a fair amount of finger-and-toe apparent in the young plants in June and July. *Insects*—Turnip 'fly' caused damage to some crops and necessitated resowing; about the usual amount of root-maggot attack on turnips and cabbages. *Weeds*—Red land oats and green crops in many instances suffered from presence of chick-weed and redshank; some red land oat crops quite smothered down by abundant chick-weed; dock-weed on the increase in good hay meadows; ragweed profuse in some pastures. *Pastures*—Were about the average in quality and amount of grazing in the latter part of the season; growth in the spring and summer much retarded by drought. *Live Stock*—Throve quite well. Cattle and sheep generally reported to be free from disease; a record in one or two cases with hill sheep stock. *Clip of Wool*—Good; over average.

ARGYLLSHIRE (islands of Islay, Jura and Colonsay). *Wheat*—None grown. *Barley*—None grown. *Oats*—36 bushels per acre; weight 40 lb. per bushel. *Harvest*—Harvest began 23rd August and ended 22nd September; an early and speedy harvest. *Hay*—Heavier than last year; about 2½ tons per acre. *Meadow Hay*—Somewhat similar to last year. *Potatoes*—Three times the yield of last year; about 6 tons per acre; no disease; potatoes of excellent quality; new varieties always being tried, but Kerr's Pink is generally the favourite. *Turnips*—About 16 tons per acre; a very good crop all through. *Insects*—No injury. *Weeds*—No damage by weeds. *Pastures*—Excellent growth and quality. *Live Stock*—Dairy cows milked well, and store cattle grew and fattened. Cattle and sheep free from disease. *Clip of Wool*—Usual quality and clip; well up to average.

STIRLING DISTRICT.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—A much better crop than last year; both grain and straw better; grain about 30 bushels per acre; seed 6 bushels per acre. *Harvest*—Harvest began about a fortnight before the usual time. *Hay*—Ryegrass hay was much the same as last year, and was got in fairly good order. *Meadow Hay*—Was a heavier crop than last year, but was got irregularly owing to broken weather in August. *Potatoes*—Crop was rather better than last year; about 6½ tons per acre; very little disease. *Turnips*—A good crop; about 25 tons per acre; brairded well; no resowing. *Insects*—No damage by insects. *Weeds*—Much less trouble with weeds owing to good weather in June. *Pastures*—Pastures were extra good. *Live Stock*—Stock throve very well. Cattle and sheep free from disease. *Clip of Wool*—Fully an average clip.

DUMBARTONSHIRE (Lower). *Wheat*—The summer of 1932 suited this crop, and it was above the average both in yield and quality; about 42 bushels per acre; weight 60 lb. per bushel; straw about 30 cwt. per acre; seed 3½ to 4 bushels per acre. *Barley*—Practically none grown. *Oats*—Not a bulky crop, but the yield of grain was good and the quality excellent; about 45 bushels per acre; weight 42 lb. per bushel; straw about 24 cwt. per acre; seed 5½ to 6 bushels per acre. *Harvest*—Harvest was general about the 23rd of August; five or six days earlier than the usual date. *Hay*—Ryegrass hay was scarcely so bulky as last year; about 36 cwt. per acre; quality was first class. *Meadow Hay*—About the same as last year, but unfavourable weather had a bad effect on the quality. *Potatoes*—Early crop about the same as last year, but main crop varieties would be 30 cwt. to 2 tons better than last year; 7½ to 8 tons per acre; very little evidence of blight; no new varieties planted. *Turnips*—Crop about 18 tons per acre, which was better by about 2 tons than last year; crop brairded well, but owing to dry weather was slow in coming to the hoe, but after singling made rapid progress. *Insects*—Practically no insect pests in evidence; grain brairded evenly and thick, and turnips were very little affected by 'fly.' *Weeds*—Dry weather in June and early July gave plenty opportunities for mastering weeds in the green crops, which were generally clean; charlock was troublesome in the oat crop. *Pastures*—Were rather bare during early summer, but the quality throughout the whole season was excellent. *Live Stock*—Did exceptionally well during the grazing season; hill lambs were better grown and carried more flesh than usual, while dairy stock did well and fattening beasts made good progress. Both cattle and sheep were particularly free from disease; a few cases of mastitis among in-calf cows were reported. *Clip of Wool*—Quality of wool was good, while the clip was rather better than average.

STIRLINGSHIRE (West). *Wheat*—A little grown, yielding about 17 cwt. grain per acre; good quality; seed about 4 bushels per acre. *Barley*—None grown. *Oats*—An exceptional year for oats; grain 18 to 20 cwt. per acre, of very good quality; straw 25 to 30 cwt.; seed about 6 bushels per acre. *Harvest*—A very early harvest, about a fortnight before the usual time. *Hay*—Quantity of hay about the same as last year; quality very good. *Meadow Hay*—Average crop. *Potatoes*—Good crop of potatoes; 7 to 8 tons as compared with 4 to 5 tons last year; no disease; no new varieties. *Turnips*—Better than last year; about 20 tons per acre; slow brairding owing to dry spell, but no resowing required. *Insects*—No injury by insects. *Weeds*—Less damage than last year owing to drier season. *Pastures*—Were poor in early part of grazing season, but good after July. *Live Stock*—Did not thrive well at beginning, but did very well later on. Cattle and sheep free from disease. *Clip of Wool*—Average.

STIRLINGSHIRE (East). *Wheat*—About 42 bushels per acre; good quality; straw about 22 cwt. per acre. *Barley*—About 30 bushels per acre; fair quality; straw about 18 cwt. per acre. *Oats*—About 50 bushels per acre; good quality; straw about 20 cwt. per acre. *Harvest*—Harvest begun a little earlier than usual, and finished well. *Hay*—Not so heavy as last year, but secured in good order. *Meadow Hay*—Fair crop and well secured. *Potatoes*—Good crop; above the average. *Turnips*—Fair average crop and good quality; brairded well; very little second sowing. *Insects*—Damage by insects about normal. *Weeds*—About the usual damage by weeds. *Pastures*—About the average growth and quality. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Average clip.

CLACKMANNANSHIRE. *Wheat*—A good crop, particularly where 'Ceresan' was used; brairded well; ripened evenly; 35 to 40 bushels per acre; straw was good—25 to 30 cwt. per acre; seed 4 to 5 bushels per acre. *Barley*—Owing to poor price, none grown. *Oats*—An exceptional crop; ripened well; colour good, and harvested in excellent condition; 35 to 40 bushels per acre; average weight 41 to 43 lb. per bushel. *Harvest*—Harvest began about the usual time. *Hay*—A good crop, and secured in excellent condition; 40 to 45 cwt. per acre. *Meadow Hay*—A good crop, and well got. *Potatoes*—2 to 3 tons per acre more than last year; Kerr's Pink 9 to 10 tons per acre; Golden Wonders 4 to 5 tons per acre; quality excellent; kept very well in the pits; no early varieties planted. *Turnips*—25 to 30 tons per acre; brairded well in most places; very little second sowing; very little finger-and-toe. *Insects*—Very little damage by 'fly.' *Weeds*—Very little damage by weeds. *Pastures*—During the season did very well. *Live Stock*—Live stock did very well, and dairy cows milked well on the grass; feeding cattle did better than usual. Cattle were free from disease; there were some cases of fluke in sheep. *Clip of Wool*—A fair average.

PERTHSHIRE (Western). *Wheat*—An average break sown; 40 to 42 bushels per acre; a very fine crop and harvested in extra good condition. *Barley*—Very little grown. *Oats*—The best crop for many years; 46 to 50 bushels per acre; all harvested in very good condition. *Harvest*—Harvest was fully two weeks earlier than usual, starting on 22nd August and finishing 19th September; on some farms the harvest took less than three weeks, and was easily the best for a long number of years. *Hay*—A good average crop; 35 to 40 cwt. per acre; very fine quality, and secured in excellent order. *Meadow Hay*—An average crop; 25 cwt. per acre, and mostly very well got. *Potatoes*—A very heavy crop; 7 to 9 tons per acre; free from disease, and lifted in good condition. *Turnips*—The best crop for many years; yellows 18 to 20 tons, swedes 22 to 28 tons per acre; free from disease. *Insects*—No damage. *Weeds*—Less weeds than usual. *Pastures*—Grass was plentiful and of very good quality. *Live Stock*—Stock did very well. Cattle and sheep free from disease. *Clip of Wool*—A good average.

PERTH DISTRICT.

FIFESHIRE (Middle and Eastern). *Wheat*—Over an average crop, and splendid quality; 40 bushels per acre; straw 35 cwt.; seed, 3 to 4 bushels per acre. *Barley*—Also over an average crop; from 40 to 48 bushels per acre; samples of grain heavy, bright and of fine malting quality; about 2 qrs. per acre better than last year; straw average yield. *Oats*—Brairded well, and was extra thick on the ground, especially where treated with 'Ceresan'; about 56 bushels grain, and 30 cwt. straw, of excellent quality; seed, 4 to 6 bushels per acre, according to variety. *Harvest*—Started about 20th August, about a week earlier than last year, and all crops secured in fine condition within one month. *Hay*—Crop slightly under an average, but of good quality; about 35 cwt. per acre; secured in good condition. *Meadow Hay*—None grown; some fields of rotation pasture are cut for hay after spring grazing; yield variable. *Potatoes*—An extra heavy crop, of from 8 to 10 tons per acre; from 4 to 5 tons better than last year; in certain varieties there was some disease, and complaints of not keeping well in the pits; no new varieties. *Turnips*—A good braird; came rapidly to the hoe; crop over an average; from 20 to 25 tons per acre; generally sound and of good feeding quality; some early sown fields suffered from mildew during the drought in September; odd fields affected by finger-and-toe and canker, especially in yellows. *Insects*—Less damage than usual was done by insects. *Weeds*—The season was specially favourable for cultivation; little or no damage was done by weeds, except where a crop was badly handled. *Pastures*—Growth was less than usual, but quality superior. *Live Stock*—Stock of all kinds throve well. Cattle and sheep free from disease; a few cases of grass sickness in horses. *Clip of Wool*—About an average. *Sugar Beet*—Area grown for the Cupar factory 723 acres, about 200 acres less than last year, produced 5551 tons washed beet, 7·6 tons per acre; average sugar content 16·67 per cent; average price per ton, 44s. 9d.; average price per acre, £17 approximately. The favourable season reflected in the deliveries. The beets generally were well grown and in good condition, and compared favourably with the averages from the English factories. Averages of over £20 per acre were common, and one grower published his returns at £32 per acre. The average crop was over 2 tons better than last year, with 1 per cent better sugar content.

FIFESHIRE (Western). *Wheat*—Favoured with a good growing season, the wheat crop was the best for several years; the grain was well filled and ripened, and in many cases the weight per bushel was above the standard; 40 to 44 bushels grain; straw of good quality and well secured; seed, 4 bushels per acre. *Barley*—Likewise a good crop and sample; 36 to 40 bushels per acre; straw an increased yield of good quality; seed, 3½ to 4 bushels per acre. *Oats*—The best crop of the season, and was generally well secured; grain of good colour and natural weight; 56 to 60 bushels per acre; straw of increased weight and good feeding value for winter stock; seed, 6 bushels per acre. *Harvest*—Will be remembered as one of the best for some years; with a genial growing season the crops ripened early, and the straw being strong stood well to the binders; harvest commenced in the early districts in the middle of August and was general by the third week, or a fortnight earlier than usual. *Hay*—Crop first-class quality, secured in good condition; 2 to 2½ tons per acre. *Meadow Hay*—Also of good quality; yield somewhat below that of ryegrass hay. *Potatoes*—The heaviest crop for some years, and the tubers of excellent quality; only on the earlier farms are early varieties grown, and in these cases the tonnage was light; main crop, 6 to 7 tons per acre; free from disease; no new varieties planted. *Turnips*—On most farms the crop was satisfactory with increased yields; the tubers were of good feeding quality and free from disease; on some farms, however, cases of finger-and-toe were seen, due to working the land when wet and not in condition at time of sowing; slow in brairding, due to dry weather; very few cases of second sowing reported. *Insects*—Crops in general free from insect pests. *Weeds*—Weeds were less troublesome than usual; the dry weather was favourable for cleaning land. *Pastures*—Were sufficient for the stock and of good feeding value; stock were housed for winter in more forward condition than in the previous grazing season. *Live Stock*—Stock throve well. Cattle and sheep free from disease. *Clip of Wool*—About average, and of good quality.

PERTHSHIRE (Eastern). *Wheat*—An excellent crop, the best for many years, and secured in first-class condition; about 44 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—A very good crop and good quality; about 40 bushels per acre; seed, 3 to 4 bushels per acre. *Oats*—A very heavy crop; much of it laid and twisted and difficult to harvest, but all secured in first-class order; about 50 bushels per acre; seed, 4 to 6 bushels per acre. *Harvest*—Harvest began about 22nd August, and was generally completed within four weeks, the weather being excellent. *Hay*—An average crop, but much of it damaged by bad weather. *Meadow Hay*—Very little grown. *Potatoes*—A much heavier crop than last year; about 10 tons per acre; considerable amount of disease amongst earlies, second earlies and King Edwards; some varieties did not keep well in the pits. *Turnips*—A much better and sounder crop than last year; about 20 tons per acre. *Insects*—Not more injury than usual. *Weeds*—Not more damage than usual. *Pastures*—Were of full average growth and quality throughout the season. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—About average.

PERTHSHIRE (Central). *Wheat*—Acreage sown about one-third more than last year; 43 bushels per acre; secured in excellent condition. *Barley*—One-third less acreage sown; about 40 bushels per acre, weighing about 50 lb. per bushel; secured in very good condition. *Oats*—The principal cereal crop in this district; the yield was exceptionally good, and the crop was secured in very fine condition. *Harvest*—Harvest began about the end of August with barley, followed by oats and wheat; the whole harvest was finished about the end of September. *Hay*—Crop was good, and secured in excellent condition; about 1¾ tons per acre, about 5 cwt. per acre less than last year. *Meadow Hay*—A fair crop as to quantity, and secured in very good condition except on a few farms. *Potatoes*—Acreage planted would be fully one-half more than last year, and the yield was very large; from 6 to 11 tons per acre; the quality was good; no disease of any note. *Turnips*—Yellows 9 to 12 tons per acre; on some farms finger-and-toe was very bad; crop brairded well, and very little resowing. *Insects*—Very little damage was done by grub or wireworm, or by turnip fly. *Weeds*—Few crops were injured by weeds; the damage was less than usual. *Pastures*—Were of average growth, and the quality was good; better than last year. *Live Stock*—Throve very well. Cattle and sheep were free from disease. *Clip of Wool*—Quality was very good, and clip up to the average.

PERTHSHIRE (Highland). *Wheat*—None grown. *Barley*—Very little grown; only small patches for stock; weight light. *Oats*—Good crop of straw and grain; natural weight about 40 lb. per bushel; generally 6 bushels sown per acre. *Harvest*—Began in the middle of August, somewhat earlier than usual, and was completed in most cases by the third week of September. *Hay*—Ryegrass and clover hay a good crop and well secured; 35 cwt. per acre. *Meadow Hay*—An average crop, well secured. *Potatoes*—A good crop, well got; about 7 tons per acre. *Turnips*—About 20 tons per acre; quality better than usual, although finger-and-toe evident on some fields; crop brairded well in most cases; a few second sowings required. *Insects*—No damage by insects. *Weeds*—Not many weeds. *Pastures*—Of average growth and quality. *Live Stock*—Stock throve fairly well, but were not leaving much, if any, profit on grazing. Cattle and sheep been free from disease. *Clip of Wool*—A good average clip, much better in quality and bulk than the previous year; weather conditions for clipping very good.

ANGUS (Western). *Wheat*—40 bushels per acre; quality of grain and straw excellent; seed 3 to 4 bushels per acre. *Barley*—40 bushels per acre, of good quality; straw likewise good; seed 3 to 4 bushels per acre. *Oats*—60 bushels per acre, with both grain and straw of excellent quality; seed, 4 to 7 bushels, according to variety and district. *Harvest*—Began about the usual date, and practically the whole of the grain was secured in good order. *Hay*—A very good crop of over 2 tons per acre, and mostly got in fine order. *Potatoes*—A fine crop of over 8 tons per acre; reports as to disease vary considerably. *Turnips*—A good crop; from 18 to 20 tons per acre, with a field or two of double that weight; very little resowing. *Insects*—No injury. *Weeds*—Crops not damaged by weeds to any great extent. *Pastures*—Average growth and quality. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—Fully average.

ABERDEEN DISTRICT.

Angus (Eastern). *Wheat*—Grain fine quality, and a heavy crop; 40 to 50 bushels per acre; in some cases the crop went down early where it was too heavy, thus reducing the yield and making the straw inferior; straw quite an average, 30 cwt. per acre; natural weight of grain, 62 to 63 lb. per bushel; usual seeding, 4 bushels per acre. *Barley*—A very much less acreage grown than formerly; quality very good; 54 to 56 lb. per bushel; from 40 to 52 bushels per acre; straw fine quality, 25 cwt. per acre; usual seeding for 'big barleys,' 4 bushels per acre. *Oats*—A magnificent crop and secured in very good order, many fields on the coast side threshing out 104 to 112 bushels per acre; weight of grain, 44 to 48 lb. per bushel; straw a heavy crop, 30 cwt. per acre, of excellent quality; seed, where dressed with 'Ceresan,' 5 bushels per acre of the newer varieties; an increased acreage was sown. *Harvest*—Was earlier than usual, beginning 18th to 20th August, and with very little interruption from bad weather was speedy and economical. *Hay*—An average crop; 40 to 45 cwt. per acre; secured in very good condition. *Meadow Hay*—Very little grown; crop would be lighter than usual, but quality good. *Potatoes*—Main crop potatoes were a very heavy crop, averaging over 10 tons per acre; very little disease. *Turnips*—A heavy crop and in most cases sound and free from disease; 30 ton crops of swedes were quite common, though average a little less; yellow turnips a good average crop, but not so heavy as swedes; brairded well and came on well all the season. *Insects*—Did no damage. *Weeds*—With a favourable season weeds were kept well in check. *Pastures*—Were abundant all the season, and feeding quality better than usual. *Live Stock*—Stock throve well. Cattle and sheep free from disease. *Clip of Wool*—Average clip and quality.

Kincardineshire. *Wheat*—34 to 44 bushels per acre; quality of grain and straw excellent; 4 bushels per acre sown. *Barley*—32 to 44 bushels per acre; quality of grain and straw excellent; 4 bushels per acre sown. *Oats*—Thin-skinned varieties, 36 to 56 bushels per acre, thick-skinned, 48 to 84 bushels per acre, and in a few extreme cases as much as 104 bushels per acre; the best crops were grown after lea; in some cases clean land corn was inclined to be thin on the ground. The yield of this crop all over and the quality of the straw and grain was excellent and above average. Seed, 6 to 8 bushels per acre. 'Ceresan' was extensively used and gave very good results. *Harvest*—Began about the same time as last year and was completed in average time, the weather being on the whole very favourable. *Hay*—A very good crop and mostly secured in good order; only late farms found the weather broken; average yield 55 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—A very heavy crop; from 8 to 12 tons per acre; disease existed to a certain extent in a few varieties; no new varieties grown. *Turnips*—Early sown turnips a good crop, but those sown later were in many cases an indifferent crop; disease existed to a considerable extent, but the open weather helped the crop, especially the later sown; yellows averaged 8 to 20 tons per acre and swedes 10 to 25 tons per acre; early sown turnips came well to the hoe, but others came very slowly and resowing was common. *Insects*—Damage to oats from grub was less than usual, especially where 'Ceresan' was used. *Weeds*—Owing to the wet spring these were very prevalent, and land required a lot of work to clean it. *Pastures*—Very abundant through the whole season and quality good. *Live Stock*—All kinds throve very well and were generally free from disease. *Clip of Wool*—About an average and quality good.

ABERDEENSHIRE (Buchan). *Wheat*—None grown. *Barley*—34 bushels per acre; seed from 3 to 4 bushels per acre. *Oats*—About 42 bushels per acre; the season was a good one and the yield was above the average; seed from 4 to 7 bushels per acre according to variety. *Harvest*—Started in the end of August and was favoured with good weather except in late districts, where it was disastrous. *Hay*—A good crop secured in splendid order; 32 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—A record crop, both in weight and quality; the average was about 5½ tons per acre; no disease; no new varieties so far as known. *Turnips*—Average yield about 15 tons; good quality; brairded well; no resowing. *Insects*—No injury by insects. *Weeds*—No damage by weeds. *Pastures*—Were of average growth and quality. *Live Stock*—Throve splendidly. Cattle and sheep free from disease. *Clip of Wool*—An average.

ABERDEENSHIRE (Central). *Wheat*—None grown. *Barley*—40 bushels per acre, 5 bushels more than last year; straw, 23 to 24 cwts. per acre, much the same as last year; natural bushel weight 54 to 55 lb., much the same as last year; seed sown, 3 to 3½ bushels per acre where drilled, 4 bushels per acre where sown by broadcast sowing machine or by hand; quality of both grain and straw much about the same as last year. *Oats*—51 bushels per acre; 13½ bushels more than last year; straw, 24 to 26 cwt. per acre, much the same as last year; natural bushel weight 42 to 43 lb. where not damaged by weather, much about same as last year; seed, Potato and all thin-husked varieties on an average 5 bushels per acre where sown by drill machine; broadcasted or sown by hand 1 to 1½ bushels extra; thick-husked varieties 2 to 3 bushels per acre additional. Quality of both grain and straw, where not damaged by weather, much about the same as last year. *Harvest*—Began about the usual time, and was generally completed by 21st October. *Hay*—About 26 cwt. per acre, 2 cwt. less than last year; much about same quality as last year, as was the mixture of rye-grass and clover. *Meadow Hay*—Much the same as last year in quantity and quality. *Potatoes*—3¼ tons more than last year; disease reported, but only to a very small extent; no new varieties planted; Majestic, Golden Wonder, Kerr's Pink, Arran Chief, were favourites; quality of tubers much about same as last year. *Turnips*—About 13 tons, slightly more than last year; very little second sowing; crop brairded well; finger-and-toe reported in the autumn, but not to a large extent. *Insects*—No injury by insects reported. *Weeds*—No injury reported on account of weeds. *Pastures*—Were a good general average throughout the season. *Live Stock*—Throve satisfactorily. Cattle and sheep were free from disease. *Clip of Wool*—Rather less than last year; quality if anything not quite so good as last year.

ABERDEENSHIRE (Strathbogie). *Wheat*—None grown. *Barley*—Very little grown, but what was grown was good, yielding about 45 bushels per acre, weighing 55 to 56 lb. per bushel; seed, 4 bushels per acre. *Oats*—A distinctly good crop, well above the average, but persistent bad weather ended in a badly harvested crop; yield above the average, but owing to weather varied from 40 to as high as 52 bushels to the acre, weighing 42 to 44 lb. and well secured samples up to 45 lb. per bushel; straw was good but, where spoilt by bad weather, was of poor quality. *Harvest*—A disappointing and protracted harvest, after giving promise of being one beyond the average; the weather broke, and crops lay in stooks for weeks. *Hay*—Only grown in small quantities for home consumption; no market. *Meadow Hay*—None grown. *Potatoes*—Yield and quality above the average, but this cannot be described as a potato district; Kerr's Pink and Golden Wonder predominate. *Turnips*—A good turnip crop, well up to the average, with very little resowing; the weather was wet at the start of the season and then became too dry; late sowings did badly owing to drought and had to be resown. *Insects*—No injury; plants were a little stiff in coming owing to dry weather. *Weeds*—In the early season usual weeds were troublesome and land difficult to clean, but this was rectified later in the dry spell. *Pastures*—Abundant, and lasted well into the autumn except in a few localities; a good grass year on the whole. *Live Stock*—Throve well. Cattle and sheep free from disease. *Clip of Wool*—A good average clip.

BANFFSHIRE (Lower). *Wheat*—None grown. *Barley*—40 to 45 bushels per acre, of good quality; natural weight, 54 to 56 lb. per bushel; seed, 4 bushels per acre. *Oats*—Yield above average; 48 to 52 bushels per acre; very good quality where the crop was secured before wet weather started. *Harvest*—Began about the usual time, but lasted longer owing to wet weather. *Hay*—35 to 40 cwt. per acre; good quality. *Meadow Hay*—None grown. *Potatoes*—Yield larger than last year and also of better quality; about 8 tons per acre; no disease; no new varieties planted. *Turnips*—Average crop; quality good; brairded well on the whole, but on stiff land the weather was too dry. *Insects*—No damage by insects. *Weeds*—No injury by weeds. *Pastures*—Above average growth; quality good. *Live Stock*—Throve satisfactorily. Cattle and sheep free from disease. *Clip of Wool*—Slightly above average.

BANFFSHIRE (Upper). *Wheat*—None grown. *Barley*—Only mere patches now grown for feeding, as distillers have stopped using home barley. *Oats*—Now the staple cereal grown, although only on considerably less areas; a fairly good crop, both in quantity and quality.

Harvest—Began early in September and cutting finished satisfactorily, but only a small portion of the crop was stacked in proper order; rains intervened and held on throughout the month of October; the ingathering was accomplished with great loss. *Hay*—Crop was fairly good and was secured seasonably; from 1½ to 2 tons per acre. *Meadow Hay*—Seldom cut for hay; mostly pastured in August and September when sown grasses get bare. *Potatoes*—No great variety of potatoes; chiefly Kerr's Pinks and Keppleston Kidneys; upland farmers only plant for home consumption. *Turnips*—Early sown turnips came duly to the hoe, but very dry weather coming on, from a third to a half of the fields failed to braird till rains came, and these portions remained much under a full crop. *Insects*—No special damage done. *Weeds*—Dry weather in early summer allowed the turnip break to be well cleaned, and harrowing and skimming proved effective in keeping down annual weeds. *Pastures*—Came on quickly but were affected by dry weather in early July; aftermath afforded a useful help. *Live Stock*—In general throve well throughout the season. Cattle and sheep free from disease. *Clip of Wool*—An average clip, but prices most disappointing.

INVERNESS DISTRICT.

MORAYSHIRE. *Wheat*—25 cwt. per acre; straw, 40 cwt. per acre; quality on the whole good. *Barley*—18 cwt. per acre; quality very good; weight, 55 lb. per bushel; straw, 18 cwt. per acre. *Oats*—15 cwt. per acre; quality on average moderate; weight, 44 lb. per bushel; straw, 22 cwt. per acre. *Harvest*—Began at usual time. *Hay*—28 cwt. per acre; quality very good and better than last year. *Meadow Hay*—Less productive than last year. *Potatoes*—Heavier than last year; about 6½ tons per acre; few cases of disease reported; little, if any, new varieties grown. *Turnips*—16 tons per acre and quality not so good as last year, crop being more variable than last year; few cases of resowing. *Insects*—No injury. *Weeds*—No damage, although fields on the average were not so clean as they were pre-war. *Pastures*—Of average growth and good quality, but growth considerably short of last year. *Live Stock*—Throve exceptionally well. Cattle and sheep free from disease. *Clip of Wool*—About average.

NAIRNSHIRE. *Wheat*—Very little grown. *Barley*—About 28 bushels per acre; straw very short; seed, 4 bushels per acre. *Oats*—About 40 bushels per acre; straw scarce; seed, 6 bushels per acre. *Harvest*—About usual time. *Hay*—About same as last year. *Meadow Hay*—None grown. *Potatoes*—Very plentiful crop; no disease. *Turnips*—Excellent crop of swedes; 10 to 12 tons per acre; yellows not so good as last year; these brairded irregularly owing to dry weather, and consequently resowing was necessary on some farms. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Average. *Live Stock*—Throve quite well. Cattle and sheep free from disease. *Clip of Wool*—Average.

INVERNESS-SHIRE (Inverness). *Wheat*—Very small area grown; about 40 bushels per acre; seed, 4 to 5 bushels per acre; straw bulky; quality good. *Barley*—An average crop; about 40 bushels per acre; much less sown, owing to distilleries being closed; quality good. *Oats*—A very good crop; return of grain larger than in the past two years; about 52 bushels per acre; straw about 30 cwt. *Harvest*—Began a week earlier than last year; the weather was good to begin with, but those in the earlier districts had some wet weather about the second week; on the whole, it was one of the best harvests for some years. *Hay*—Not quite so good as last year, owing to the very dry weather in June. *Meadow Hay*—A good crop and well secured. *Potatoes*—A very good crop; excellent quality; about 6 tons per acre; no disease. *Turnips*—Early sown turnips brairded well, but sowings in June were weeks in the ground before they brairded; came away after the first day's rain, and with the open back-end eventually became a very good crop. *Insects*—No injury by insects. *Weeds*—No damage by weeds. *Pastures*—On light land pastures suffered from drought, but taking an average of the grazing period the season would be about the same as last year. *Live Stock*—Did very well. Cattle and sheep free from disease. *Clip of Wool*—Much heavier than last year.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—A heavier crop than last year, though somewhat backward until July. *Harvest*—Commenced early—about the third week of August—but on account of broken weather the crop was difficult to handle and secure. *Hay*—A light crop on account of cold weather in early summer; quality fairly good. *Meadow Hay*—A good bulk, but not well secured; where cutting was late, some of the crop was lost. *Potatoes*—A good crop as to bulk; heavier than last year; quality variable—quite good in some places, while in others very soft; very little disease. *Turnips*—A light crop; some of the seeds never came up owing to dry weather; second sowing necessary in some places. *Insects*—No appreciable damage. *Weeds*—Crops are always more or less injured by weeds, but the damage was not serious. *Pastures*—Were on the whole quite as good as last year. Growth continued well on to the back-end. *Live Stock*—Throve well and were in good condition in the autumn. There was not much disease in cattle or sheep during the season, and sheep from the hill weighed well. *Clip of Wool*—Slightly heavier than last year, but, like the clips for previous two seasons, was difficult to market.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—Average crop; mostly secured in good order, but those who were late in cutting missed the good weather, and stooks stood out until November. *Harvest*—Started at the end of August. *Hay*—Average crop; secured in good order by middle of August. *Meadow Hay*—Light crop; not so good as last year; secured in good order. *Potatoes*—Heavy crop; more abundant than last year; principal varieties planted were Kerr's Pink and Golden Wonders; free from disease; no new varieties planted. *Turnips*—Light crop; quality under the average; second sowings were required in a number of cases owing to dry cold weather in June. *Insects*—Crops were not injured by insects. *Weeds*—Crops were not injured by weeds: less prevalent than last year. *Pastures*—Were of average growth and quality. *Live Stock*—Throve well. Cattle and sheep were free from disease. *Clip of Wool*—About the average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—Very little grown; 36 to 40 bushels per acre; seed, 3 to 4 bushels per acre. *Barley*—Not so much grown; 30 to 36 bushels per acre; seed, 4 bushels per acre; quality of grain and straw average. *Oats*—40 to 80 bushels per acre; seed, 5 to 8 bushels per acre; quality of grain and straw average. *Harvest*—Began about seven days earlier than usual; wet weather delayed harvesting and damaged quality of both grain and straw. *Hay*—1 to 1½ tons per acre; quality not quite up to average owing to wet weather. *Meadow Hay*—None grown. *Potatoes*—4 to 8 tons per acre. *Turnips*—Not such a good crop as last year; swedes, 12 to 25 tons per acre; yellows, 10 to 20 tons per acre. *Insects*—No injury. *Weeds*—No damage. *Pastures*—Quite average growth and quality. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of Wool*—About average and good quality.

ROSS-SHIRE (Tain, Cromarty, and Invergordon). *Wheat*—A good crop; on heavy land 6 qrs. was not uncommon; generally speaking, there was an increase of 3 bushels over last year, which would make an average crop of 37 bushels per acre; quality good; straw good; seed, 4 bushels per acre. *Barley*—A fair crop; 36 bushels per acre; straw light generally; quality and colour good; seed, 3½ to 4 bushels per acre. *Oats*—A fair crop; about 50 bushels per acre; quality of grain and straw good; seed, 4 bushels to 6 bushels per acre, according to variety. *Harvest*—Commenced about a week later than last year. *Hay*—A fair crop of about 30 cwt. per acre; quality good; a great portion secured in good order. *Meadow Hay*—None grown. *Potatoes*—About 6½ tons per acre; not much blight; farmers resorted to spraying extensively. *Turnips*—Fair to good, improving very much until late autumn, especially swedes; swedes about 26 tons per acre; yellows, 23 tons per acre. *Insects*—No injury. "Ceresan" more or less stopped "leaf stripe." *Weeds*—Land generally fairly clean. *Pastures*—Average growth and quality. *Live Stock*—Did well on grass. Cattle free from disease, but worms of all kinds in sheep caused a lot of harm. *Clip of Wool*—Average.

SUTHERLANDSHIRE. *Wheat*—None grown. *Barley*—A fair crop, but very little grown; a good harvest and secured in good order. *Oats*—A good crop in all districts and secured in good order in early districts. *Harvest*—An early harvest, and in most districts a very short one owing to good weather. *Hay*—A light crop owing to dry weather in June and July, but quality good. *Meadow Hay*—A poor crop and very late; on the West Coast secured in bad order. *Potatoes*—A very good crop and grand quality; the heaviest crop for years; no disease; new varieties not grown to any extent. *Turnips*—A good crop in most districts, and grew very well in the months of October and November; in some cases had to be resown on account of dry weather. *Insects*—Did not do much harm. *Weeds*—The crops were not injured by weeds, owing to dry weather. *Pastures*—Grass to begin with was scarce, but improved very much in August and September, and remained good to the end of the year, owing to the wonderful fine weather in October onwards and no frosts. *Live*

Stock—Did very well, especially on the hills, where sheep did uncommonly well; cattle throve well owing to dry summer. Cattle and sheep free from disease and a good crop of lambs in most districts, on the East Coast especially. *Clip of Wool*—A good clip of wool, very much better than last year; quality good, but price lowest during the last forty years.

CAITHNESS-SHIRE. *Wheat*—None grown. *Barley*—Only small quantities grown; about 30 to 36 bushels per acre; seed, 4 bushels per acre; there being little more than 300 acres of bere or barley in the whole county. *Oats*—Over 25,000 acres sown and of a good few varieties; seed, from 4 to 6 bushels—with large grains even more; "Ceresan" was used with a saving of seed, but further trials are necessary to test the benefits accruing from the treatment. *Harvest*—Began early in September. The weather was favourable for some weeks, but throughout October the weather was very broken; grain early secured was of very good quality and weight. *Hay*—Crop was up to the average and was secured in good condition; wild white clover was extensively sown, with good results; cocksfoot and the natural grasses are used in larger proportions with ryegrass, in view of their permanence when pastured. *Meadow Hay*—Was up to the usual, but most of it was pastured, and only in the hilly districts was it cut and preserved for winter keep. *Potatoes*—Crop was unusually abundant; there was a large proportion of tubers of great size, and the quality of most kinds was excellent, being mealy, dry, and of good flavour; there was little disease of any kind; 8 to 10 tons per acre were frequent. *Turnips*—In many instances were slow in growing until favourable showers came; the average yield was 20 to 30 tons for yellows and rather less for swedes; the mild weather without much frost and hardly any snow at the end of the year was very helpful to this healthy food for cattle and sheep. *Insects*—There were hardly any complaints of grub attack on corn crops; the larvæ were seen in plenty in the soil, but whether moist conditions hastened their development to the wing stage or whether they were kept in check by flocks of rooks is worthy of investigation. *Weeds*—Thistles, coltsfoot, spurrey, and sow thistles infest corn crops; and pastures, especially where wet, are being overrun with rushes which spread in bunches notwithstanding frequent cutting. *Pastures*—Were good throughout the summer, and foggage kept on growing after harvest; stock kept outside till late in the year, thus saving fodder. *Live Stock*—Cattle and sheep made good progress and continued in good forward condition, but the prices were more and more disappointing as the season advanced. *Cattle and Sheep*—Foot-and-mouth is unknown in Caithness; anthrax and sheep scab are being eradicated; tuberculosis is also being combated, and fluke in sheep may soon be a thing of the past. *Clip of Wool*—A good clip, but the price continued to fall.

ORKNEY. *Wheat*—None grown. *Bere*—Sowing was completed about middle of May; seed, 4 bushels per acre; healthy plant which ripened early; cutting commenced end of August; crop secured in good order; yield averaged 39 bushels per acre; weight about 49 lb. per bushel. *Oats*—A fair quantity of oats was sown about first week of March—a month earlier than usual. The last week of March and the first half of April was wet. Sowing was thus delayed and all hope of early sowing abandoned on farms generally. Sowing again general about 20th April. Lea land finished in April and clean land about the middle of May. In June the lea oats had a good appearance, but clean land oats stunted. A superior quality of grain and straw was harvested—the best for many years. Grain averaged 41 lb. per bushel. A high average return of 40 bushels per acre. *Harvest*—Cutting commenced first week of September, and on small holdings most of crops secured about first week of October. The end of October saw the most of the large farms secure. No shake; generally speaking, the ripening was very uniform; wet weather set in about the middle of September and on a few places scything had to be resorted to. A much earlier harvest than usual. *Pastures*—A very good bite during first half of April, but growth retarded during May and June. However, some very pronounced soles of clover when warm weather prevailed in July. During harvest and right into late November more grass was seldom seen. *Hay*—A light crop; a wet April and a cold May retarded growth, then a very short ripening period resulted in light crops. Cutting commenced end of June; quality good. *Meadow Hay*—Very little grown. *Potatoes*—An abundant crop and free from disease. Average about 8 tons per acre; no new varieties. *Turnips*—A wet April and dry May made it difficult to work up land for seeds; the early sown came away splendidly; later sown were hampered by lack of rain and by cold north-east winds, consequently long in coming to hoe; some farmers of opinion that land dunged on flat and drilled early in May had best crops. Sowing took place after middle of May to the middle of June; few, if any, resowings; surprisingly good yields. The best show of heavy roots for many years. *Insects*—Damage by grub was very slight; although a dry season, the turnip fly was not prevalent and practically no finger-and-toe. *Weeds*—Clean land suffered from yarr; runch not nearly so prevalent as usual. *Live Stock*—Cattle did well on grass; lambs throve well; sheep free from disease. *Clip of Wool*—Average, but poor price.

SHETLAND. *Wheat*—None grown. *Bere*—26 cwt. per acre of grain; 50 lb. per bushel. *Oats*—17 cwt. per acre; 40 cwt. straw. *Harvest*—Commenced about the usual time; crops were secured in very good order; grain and straw bulked well. *Hay*—Crop averaged about 28 cwt. per acre of very good quality, and secured in good order; the weight per acre was above that of last year. *Meadow Hay*—Was also a heavier crop than last year; weight about 17 cwt. per acre. *Potatoes*—Crop was a little below last year; the average weight was about 8 tons per acre; no disease; no new varieties planted. *Turnips*—Crop average was much about the same as last year—from 8 to 9 tons per acre; dry weather at sowing time caused many blanks in the young plants; in some parts finger-and-toe did much damage. *Insects*—No damage. *Weeds*—Owing to the dry summer weeds were easily kept down, except charlock, which is seen in many crops every year. *Pastures*—Were very good all through the year. *Live Stock*—Animals did very well; lambs and cattle sent to the markets in autumn were in good condition. Cattle and sheep were free from disease. *Clip of Wool*—The wool clip was very good, fleeces being fully heavier than for the past few years.

THE WEATHER OF SCOTLAND IN 1932.

By J. CRICHTON, M.A., B.Sc., F.R.S.E., Edinburgh.

THIS report consists of (1) a general description of the weather from month to month, and (2) a selection of rainfall returns in which each county of Scotland is represented by one or more stations. It is to be noted that all temperature readings referred to are, unless otherwise stated, from the thermometers exposed in the regulation " Stevenson Screen."

JANUARY.

Mild, very unsettled and stormy weather with frequent heavy rains prevailed during the first three weeks, barometric pressure being generally below the average and gales both frequent and widespread. The stormiest period was perhaps that between the 13th and 19th when much damage was done by the strong gales. On the 13th the wind reached in a gust the velocity of 95 miles per hour at Bell Rock, 89 miles per hour at Lerwick and 86 miles per hour at Butt of Lewis. On the 14th a gust of 84 miles per hour was registered in Edinburgh. An improvement set in during the last ten days, the weather situation being dominated by a large European anticyclone; barometric pressure became rather high and there was, particularly in southern and south-eastern districts, less rain. The advent of this period of high pressure resulted in the mean barometric pressure for the month being slightly above the average.

The persistent prevalence of very mild weather was outstanding, and the mean temperature was as a consequence well above the normal, being on the average slightly more than 5 degrees above that for the normal January. The high temperatures were mainly due to winds having come a long distance over the sea, even from tropical or sub-tropical regions. One such burst of sub-tropical air around the 18th caused record high temperatures to be experienced in many areas, but particularly in the north. On this date the maximum at Inverness was 65° F., while on the same day 61° F. was registered at Gordon Castle and 60° F. at Banff. There were some cold nights, particularly those of 8th, 9th, 12th, 26th and 31st; the lowest screen temperature recorded was that of 20° F. at Braemar on the 8th, the next being that of 21° F. on the same morning at West Linton. In contrast with these the lowest temperature in January 1931 was 6° F. Ground frosts were reported on all but 9 days, but they were not severe, the severest locally being those on the mornings of the 8th and 9th, when the grass thermometer dropped to 13° F. at Balmoral and Braemar respectively.

Rainfall, except in eastern districts from the Moray Firth to the Borders, was above the normal, the heavy rains experienced during the first fortnight giving rise to widespread flooding, much damage to property and in not a few instances to loss of life. At Kinlochquoich rain to the amount of 100 or more tons per acre fell on 13 days, on three of which there were over 300 tons per acre and on seven over 200 tons per acre. The heaviest falls were recorded on the 2nd when several stations in the west and north-west had as much as 300 tons per acre; this amount also fell, but more locally, on the 3rd, 9th and 14th. The rainfall for the month, measured in inches, was 31·75 at Loan (Loch Quoich) and 29·49 in. at Kinlochquoich; in contrast with these large falls the total for the month was less than 1·5 inches at Dirleton, Belhaven, North Berwick and Buddonness. Snow, sleet or hail showers occurred locally, being most frequent during the first fortnight, while fog, very local in character, was reported on 10 different days and thunderstorms on 4th and 7th, and between 13th and 15th. In spite of the disturbed weather experienced during the month, eastern and extreme northern districts enjoyed more than the average sunshine, it being the sunniest January on record at Edinburgh, Gordon Castle and Nairn; at Dunbar there were no less than 94 hours' sunshine registered. In the west and north-west there was, however, a deficiency of sunshine, the amount at Stornoway being only 20 hours. Aurora was observed on the nights of 6th, 7th, 11th and 25th.

FEBRUARY.

The quiet anticyclonic conditions existing at the end of January persisted throughout February, it being one of the quietest and driest months of the name on record. Throughout, barometric pressure was high; in the Edinburgh area the mean pressure was the highest for any month since at least 1769, while for the country as a whole the highest since at least 1856.

As in January temperature was high for the season, the highest temperatures occurring mostly around the 3rd, 6th and 23rd, and the lowest on 11th and 18th. 58° F. was registered at Crieff and Perth on the 3rd, and on the morning of the 11th the minimum was 15° F. at Dalwhinnie. Under the quiet conditions night frosts were frequently intense and widespread, being reported on all nights except that of the 5th. The lowest grass temperatures recorded were those of 7° F. on the 11th, 8° F. on the 18th and 10° F. on 16th, all at Dalwhinnie; 12° F. was reported from Renfrew on the 13th and from Balmoral on 18th.

The outstanding feature of the month's weather was its dryness. At many places there was a complete absence of measureable precipitation in any form, whilst in others it was the smallest in amount since records commenced. Amongst places without rainfall or having no measureable rainfall were Ayr, Greenock, Maybole, Glenotive, Hamilton, Chipperkyle (Dumfries) and Stronvar (Balquhidder). Only in the extreme north did the rainfall reach 1 inch or more, the largest probably being that of Achfary (Lairg), with 2·67 inches, 1·31 inches of which fell on the 2nd. Over Scotland as a whole the rainfall was generally less than 10 per cent of the average; no place had as much as 55 per cent. As a result of the general deficiency of rainfall many places experienced partial or absolute droughts. There were showers of hail, sleet or snow locally on 5 days, but amounts of snow were small.

Gales and thunderstorms were not recorded during the month, but mist or fog on the other hand was prevalent, particularly in the early mornings, being reported from some place or another on all days excepting the 10th, 11th, 24th and 27th. The fog was dense locally on 8th, and again between the 15th and 18th. In the Clyde area there was fog on 19 different days.

The duration of bright sunshine was generally above the average, and aurora was observed on nights of 3rd, 4th, 8th, 11th and 12th.

MARCH.

The quiet conditions of February extended into March, but only for two or three days, when weather for a time became rather unsettled and at times stormy. About the 10th an improvement took place, and this continued until about the 21st, when very unsettled conditions were renewed, and these persisted until the end of the month. Gales occurred on 5th, 6th, 22nd, 26th, 27th, 30th and 31st, those on the last two dates affecting most of the northern and north-western districts.

In March, as in the previous two months, the mean temperature was above the normal; the warmest periods were centred around the 13th, 19th and 26th, and the lowest screen minima were recorded on the 4th, 8th and 12th; amongst the extremes were 60° F. at Arbroath on 13th and 4° F. at Dalwhinnie on 12th; locally the maximum recorded did not reach 50° F. Ground frosts were both frequent and widespread, being reported from some place or another on all mornings except those of 20th, 25th, 27th and 28th. The lowest grass temperatures were those of 4° F. and 3° F. on 3rd and 18th respectively at Dalwhinnie; readings of 15° F. or under were, however, not infrequent.

In northern and eastern districts, including the Orkneys and Shetlands and locally elsewhere, particularly in Argyllshire, rainfall totals were above the average. The deficiency in the remaining areas was in places well marked, notably so in parts of Inverness-shire and Western Perthshire. The drought which was so pronounced in February generally gave way about the 3rd or 4th, but most rain fell during the last ten days of the month. Snow, sleet and hail were of frequent occurrence, being reported mostly between 4th and 12th, again on 15th and 19th, and on 30th and 31st; around 6th and 7th there were some heavy falls of snow locally and much drifting was associated with the strong winds. On the 6th snow lay to a depth of 5 inches at Strathpeffer, and to the same depth on the 7th at Pearsie (Glen Prosen).

Thunderstorms occurred on the 5th, 6th and 30th, western districts being mostly affected on the 5th and 6th and south-eastern areas on the 30th. Fog was of frequent occurrence, being reported on about 20 different days; the fog was dense locally at times, particularly on the 4th in the Clyde area.

March was generally dull, sunshine aggregates being generally well below the average. Aurora was observed on the nights of 4th, 7th, 8th, 10th, 11th, 19th, 28th, 29th, 30th and 31st, the most widely observed displays being those of 7th, 10th, 28th and 31st; on 5 occasions aurora was observed as far south as Dumfriesshire.

APRIL.

The passage of depressions and associated secondaries southwards or south-eastwards across the British Isles gave very unsettled showery and cold weather with frequent strong winds, gales being reported from some place each day from 6th to 14th, and again on 23rd, 25th and 29th, those of 6th and 10th being perhaps the most widespread. Around the 12th and again about the 17th there were brief anticyclonic spells.

In western districts there was a relatively mild spell towards the close of the month; apart from this the month was generally cold, it being the coldest April since 1922. The coldest periods were centred around the 3rd and 17th, the temperature on the grass on each of these mornings falling at Dalwhinnie to 9° F. On the 3rd the grass temperature at Renfrew was 16° F. Ground frosts occurred on all but 5 mornings. The highest temperature recorded was probably that of 62° F. at Onich on the 30th.

Locally in a small area in East Lothian rainfall totals failed to reach the normal, elsewhere they were in excess, the wettest areas being those adjoining the Moray Firth. The 9th was a wet day, the equivalent of over 100 tons of water per acre falling in central, southern, western and northern districts; locally, similar amounts fell on 1st, between 5th and 10th, and again on 13th. Snow, sleet or hail fell in places during the first fortnight and again between 20th and 25th; the greatest depth of snow reported was that of 3 inches at Bangour on the 2nd.

Thunderstorms were rather frequent, occurring at least on 15 days, while fog was reported on 21st and again between the 27th and 30th, being rather dense on the 29th in the Firth of Forth.

Although the month was on the whole unsettled, southern and south-eastern areas generally enjoyed more than the normal sunshine, but elsewhere there was a marked deficiency. Aurora was observed in northern districts each night from 1st to 4th, and on 6th, 7th, 11th and 21st.

MAY.

Barometric pressure was, at the beginning and towards the end of the month, high to the north-west or north and relatively low to the south or south-east of the British Isles, this distribution being accompanied with a predominance of cold north-easterly winds with more rain and cloud in southern and eastern areas than in the north and west. In the intervening period the weather was of a southerly to south-westerly type. Gales were reported on 6 days.

The mean temperature differed little from the average, this being due to the relative mildness of the nights, as the days on the whole were rather cold. Brief warm spells were centred about the 17th and 31st; on the latter date the temperature rose to 72° F. at Ruthwell, and to 70° F. at Achnashellach and Glenbranter. The coldest period lay between the 6th and 9th, the screen temperature during this period dropping locally to 25° F. and the grass temperature to 16° F. Ground frosts were frequent in the early mornings.

In western and northern districts rainfall totals were below the average, but for the country as a whole the totals exceeded the normal, the greatest excess being probably that on the eastern slopes of the Grampians. Heavy falls occurred in places, particularly in western and northern districts, on 8th, 12th, 15th, 16th, and 20th. Snow, sleet or hail fell locally between 4th and 10th and again on 24th and 25th; snow lay to a depth of 2 inches at Braemar on 6th and 7th.

Thunderstorms occurred on 10 days and fog on 13, being dense locally on 1st and 31st.

Sunshine aggregates were, apart from a few districts, chiefly in the extreme north and in southern Hebrides, well below the average May figures. It was the most sunless May in Edinburgh since 1925. Aurora was observed locally in northern districts on nights of 2nd, 4th, 5th and 8th.

JUNE.

Weather during June was on the whole quiet and dry with temperatures generally about the normal, barometric pressure being generally high to the north, west or south of Scotland. There was, as in February, a complete absence of gales.

Warm days were experienced at the beginning, around the middle and again towards the end of the month. On the 16th and 17th temperatures in many areas rose to between 70° F. and 80° F., 80° F. being recorded at Ruthwell on 16th and at Paisley and Renfrew on 17th. The 80° F. level was not reached during the warm spells at the beginning or end of the month but temperatures frequently reached over 70° F. during these periods. In the Shetlands the temperature, however, locally failed to reach 60° F. Some low temperatures were experienced in the early mornings, 27° F. being registered at Dalwhinnie on 6th; on the same morning the grass temperature was at the same place 18° F. Ground frosts occurred, particularly between the 4th and 9th, and again between the 18th and 22nd.

June was a dry month, rainfall aggregates being everywhere below the normal; the deficiency was very pronounced in regions adjoining the Caledonian Canal. At Nairn there was only a tenth of an inch of rain, this being the smallest June figure since at least 1866. In many districts there was little or no rain until the 24th or 25th, most of the rain falling on the closing days of the month. At Ayr the month's total was 1·46 inches, and of this 1·25 in. fell on the 28th; this was characteristic of the rainfall totals.

Hail showers fell very locally on 2nd, 4th and 9th, and fresh snow was reported on the Grampians on the 4th.

Thunderstorms occurred on 13 days, and fog on 5. Sunshine aggregates varied greatly; Edinburgh and the Orkneys enjoyed more than an hour per day above the average, while in the northern Hebrides there was less than the average.

JULY.

Rather unsettled and somewhat variable weather prevailed during July, this being due to the persistence with which secondary depressions followed one another north-eastwards across the country. However, there were few storms of great violence, although gales were reported from the Orkneys on 1st and 4th.

Short warm spells were centred around the 9th, 19th and 31st, but they were very local in character. Locally, particularly in eastern districts, temperatures on the 9th, 10th and 19th reached or exceeded 75° F., the highest being 83° F. at Aberdeen on the 10th; 80° F. was registered at Stonehaven on the 9th and at Edinburgh on the 10th. Days, apart from those during the warm spells, were generally cold and had it not been for the mildness of the nights the mean temperature would have been below normal. The warmest day at Balmoral was the 15th with 72° F., and this was followed by the coldest, on which the maximum did not go beyond 53° F. Ground frost occurred at a few places on the 15th, 18th and 23rd.

Over south-eastern Scotland, particularly in regions adjoining the coast, locally in the Tay and Clyde estuaries, along the Moray Firth and in the Hebrides, rainfall totals were below the normal; elsewhere they were above the average, and, on account of the prevalence of rain of a thundery type, varied irregularly, large daily falls being not infrequent. Another feature of the rainfall was that in many areas there were only a few rainless days. It is reported that at Glencoe 1·30 inches of rain fell on the 30th in 4 hours, while at Ardgour and Polloch House (Glenfinnan) there were 4 days each with more than an inch of rain.

Thunderstorms were frequent and at times widespread, occurring on at least 19 days, the most general being those of 3rd and 4th, 21st and 22nd, on each day from 24th to 28th, and on 30th and 31st; those most frequently reported were those of 3rd, 26th and 31st. Fog occurred on 10 days, and was on the 31st very dense in the Shetlands.

It was a rather sunless month, the deficiency of sunshine reaching an average of almost an hour per day in all districts.

AUGUST.

At the beginning and towards the end of the month the weather was of a rather unsettled type, while in the intervening period conditions were more or less anticyclonic, the mean barometric pressure for the month being the highest for August since 1899. In the Edinburgh area, the lowest pressure recorded stood at a higher level than any previous minimum August pressure since at least 1840. Gales were reported on two occasions.

As in the previous month the nights were very mild on the average; there were, however, some warm days, particularly around the 6th, 11th and 16th, 82° F. being registered at Kelso and Marchmont on the 11th, and, on the same day, 81° F. at Ruthwell. Locally in northern and western districts the highest temperature during the month failed to reach 70° F. Ground frosts were noted between the 22nd and 25th and again on the 31st.

The outstanding feature of the weather during the month was its dryness; only in the Hebrides, in Sutherlandshire and in the Orkneys and Shetlands did rainfall totals exceed the normal; southwards and south-eastwards from these areas the rainfall deficiency increased until locally there was less than 10 per cent of the normal, and over a wide area, extending from Aberdeenshire to the Borders, less than 40 per cent. It was in places, particularly in the Lothians and in Fife, the driest August on record. In Edinburgh it was the driest month of the name since at least 1785. In western and north-western districts the 11th, 12th and 31st were very wet locally, falls locally in one or other of these dates exceeding an inch.

Thunderstorms were reported on 6th, 8th, 11th to 13th, and 19th to 21st, those in the two latter periods being experienced in most districts, those of the earlier period being accompanied locally with flooding and structural damage. Fog was recorded on 10 days and was dense at West Linton and Balerno on the 14th.

Although August was very dry there was a deficiency of sunshine in most districts, this being due to the prevalence of cloud; only in the extreme north did the sunshine figures reach or exceed the normal. In the southern Hebrides, at Tiree, a very sunny spell was enjoyed between the 21st and 25th, the daily average over this period exceeding 12 hours.

Aurora was observed on the nights of 3rd, 4th, 18th, 27th, 28th and 29th, that of 27th being widely observed in Scotland.

SEPTEMBER.

The unsettled weather which set in towards the end of the previous month persisted, apart from brief intervals towards the middle and towards the end of the month, throughout September, the mean barometric pressure and the mean temperature both being below the normal and the rainfall above the average; gales were reported on 5 days.

As in July and August the nights were rather mild, but on this occasion the days were on the whole rather cold, the defect in day temperatures being greater than the increase in night temperatures. There was a brief warm spell, particularly over eastern districts, around the 15th, when temperatures of over 70° F. were enjoyed; on the 15th, 79° F. was registered at Aberdeen, 76° F. at Balmakewan and 75° F. at Montrose and Marchmont. The coldest mornings lay between the 20th and 28th, 24° F. being registered on the screen on the 21st at Dalwhinnie, and on the 28th at Eskdalemuir. At Renfrew the grass temperature on the 21st was 17° F. Ground frosts were noted on 11 different mornings.

Rainfall aggregates were, with the exception of a small area, chiefly confined to central Perthshire, well above the normal, the difference from normal increasing both to the northwards and southwards of this area, until in northern counties and in the border districts the rainfall reached twice the average. There were few dry days, and locally in north-western districts there was only one dry day. On some days there were in places heavy falls, amongst such may be mentioned those of 2·38 inches at Monreith (Port William), 2·37 inches at Glasserton (Whithorn) and 2·31 inches at Physgill (Whithorn). Hail or sleet fell in the Orkneys on 3rd and 19th, and fresh snow was observed on the Grampians on 19th, 20th, 24th and 25th. Hail was also reported from Dunbar on the 19th.

Thunderstorms occurred on 2nd, 3rd, 5th, 7th, 8th, 10th and 25th; the storms were chiefly located in eastern and southern districts and were local in character; those of 7th were mainly confined to districts adjoining the Tay estuary and those of 25th to Aberdeenshire.

Eastern districts enjoyed about twice as much sunshine as western and north-western districts, sunshine totals in the east being generally above the normal and those in the west and north-west subnormal. Aurora was observed each night from 6th to 8th, on 14th, from 23rd to 25th, and on 28th and 29th.

October.

October was very unsettled, cold, dull and wet with frequent heavy rains and strong winds, gales being recorded on 12 different days. The disturbed conditions were due to the frequent passage of depressions south-eastwards across or near to the British Isles.

Both maximum and minimum temperatures were below the normal, no warm spells were enjoyed, the mildest days being the 7th, 9th and 12th, when locally the thermometer reached the 60° level. On the mornings of the 4th and 24th the thermometers in the screen at a few places read as low as 24° F.; ground frosts were reported on 20 days, the lowest grass temperature registered being that of 16° F. at Renfrew on the 29th.

Rain was frequent and at times excessive. Over most of eastern Scotland rain totals were generally more than twice the average whilst elsewhere with only a few exceptions the totals were above normal. The wettest days were perhaps the 7th, 8th, 17th and 29th, many places having on one or more of these days over an inch of rain or more than 100 tons of water per acre. On the 7th over 2 inches fell at Dalry (Forrest Lodge), Carsphairn, Arrochar, Tyndrum and Moniaive (Glencrosh). In many districts there was not a single day without measurable rainfall, while locally the aggregate for the month was the highest for October on record and at not a few places the highest for any month. At Aberdeen and Arbroath it was the wettest October since at least 1866. Snow, sleet or hail fell locally around 3rd, 13th, 17th, 20th, 23rd and between 26th and 31st; during the last few days the snow had a tendency to lie in the Braemar district.

Thunderstorms occurred very locally on 14th, 17th, 20th, 21st and 23rd, and fog on 14 days, being dense locally in the Glasgow area on 24th and 30th, and at Braemar on 13th.

As already mentioned the month was dull; sunshine aggregates were everywhere below the average; the defect in the Hebrides almost reached an average of one hour per day. Aurora was observed each night from 20th to 24th, and also on 27th and 29th; the display on 20th was perhaps the most widely seen, being noted as far south as Dumfriesshire.

NOVEMBER.

The disturbed conditions prevailing in October persisted in November until around the 5th when there was a considerable improvement, anticyclonic conditions becoming established. Around the 18th unsettled conditions were renewed, and these lasted until the end of the month, and during this period there were frequent and at times severe gales. Gales were recorded on 12 days, occurring almost daily between the 19th and 29th, and being at times rather destructive. At Butt of Lewis the wind reached in gusts over 60 miles per hour on 23rd, 24th, 27th, 28th and 29th; during this stormy period gusts of 80 miles per hour and 75 miles per hour were registered at Kirkwall and Lerwick respectively on the 27th, and 78 miles per hour at Bell Rock on 26th.

There were no warm and no cold spells during the month and the mean temperature differed little from the normal. Ground frosts were noted on all days excepting the 3rd and 4th.

The outstanding feature of the month was the occasional very heavy rains, particularly in western and some northern districts. The 3rd was very wet; on that day 3·83 inches fell at Ardgour, 3·44 inches at Glenquoich and 3·08 inches at Achnacarry. Over Southern and Eastern Scotland, south and east of a line joining Banff to Glasgow, and also in the Hebrides the rainfall aggregates were below the average, the deficiency being well marked along the east coast from Aberdeen to the Borders, it being locally the driest November on record; in the remaining regions there was an excess, this perhaps being greatest in the regions lying around the Caledonian Canal. At Crailing, Roxburghshire, the total for the month was only ·84 inches, while at Kinlochquoich it was 20·19 inches. Snow, sleet or hail fell between the 20th and 25th, on 27th and 30th; the snow drifted locally and tended to lie between the 23rd and 25th; no heavy falls of snow were reported, the greatest depths being 6 inches at Braemar on 24th and 7 to 8 inches at Dalnaspidal on 25th.

Thunderstorms were reported between the 22nd and 24th and again on 30th; that of 23rd being noted as very severe in parts of Argyllshire. Fog was reported on 17 days, and on the 7th and 19th was very dense locally, particularly in districts in Clyde and Forth valleys.

In the north sunshine totals were slightly above the average and in the south generally subnormal. Aurora was observed on nights of 4th, 5th, 16th and 22nd.

DECEMBER.

Unsettled weather characterised the opening days of December, but around the 6th there was a decided improvement which extended to the 12th, when once more unsettled conditions were renewed with frequent heavy rains, particularly in southern and central districts; much flooding took place, and in addition gales caused much structural damage. There were 14 days with gales, most of these happening in the second half of the month; at Lerwick gusts of 83 and 82 miles per hour were registered on 18th and 24th respectively, and on 17th one of 94 miles per hour; on the 17th there was a gust of 87 miles per hour at Butt of Lewis and one of 79 miles per hour at Edinburgh.

The month was on the whole extremely mild; on the 16th the thermometer locally rose to the 60° level; during the anticyclonic period there were some cold nights, the temperature at Dalwhinnie dropping to 12° F. on the 8th, the grass temperatures at the same place being down to 8° F. on the mornings of 8th, 11th and 31st. During the quiet cold spell several sea lochs were reported in the daily press as being icebound. Ground frosts were reported on all but seven nights.

To the north of latitude 57° and very locally elsewhere, rainfall was less than the normal, the deficiency being greater than 50 per cent locally, while south of latitude 57° the totals were generally well in excess of the average, being in parts of the Lothians and Dumfriesshire as much as twice the normal. The prolonged and heavy rains experienced over most of southern and central Scotland between the 14th and 19th were accompanied by widespread flooding; rivers in many parts burst their banks and much structural damage was done; at a few places the total fall for this period approached or exceeded 8 inches; at Glendevon from the 15th to the 18th there fell 9·61 inches or nearly 1000 tons per acre. The wettest days were perhaps the 1st, 15th, 16th, 17th and 22nd when large falls were too numerous to enumerate, falls of over 2 inches on either of these days being common. Snow, sleet or hail fell on a few days, but no heavy falls of snow were reported.

Local thunderstorms occurred between the 2nd and 4th and again on 15th, while fogs were reported on 16 days, being dense at Balerno on 10th.

Sunshine aggregates, although the month was so disturbed, differed little from the average. Aurora was observed on 7 nights.

GENERAL NOTE.

Perhaps the most notable features of the year 1932 were (1) the dryness of February, June and August; (2) the frequent and excessive rains during October; (3) the contrast in rainfall between northern and southern districts in December, the north being relatively dry in comparison with the south; (4) the frequency and extent of flooding in January and December; (5) the strong gales in January and December; (6) the extreme mildness of the first three weeks of January and the last two weeks of December; (7) the lack of sunshine during the year generally and particularly in the months of May and July, and in contrast with this the amount of sunshine enjoyed, notably in May, in the Southern Hebrides.

RAINFALL RECORDS FOR 1932, IN INCHES.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick .	5·46	1·15	3·35	4·16	1·48	1·50	3·33	3·71	5·10	3·38	3·20	2·59	38·41
Orkney—Kirkwall . .	4·95	·59	3·30	3·08	1·26	·63	2·78	2·90	4·30	3·92	4·24	3·02	35·08
Sutherland—Tongue .	5·91	1·23	4·11	4·23	2·84	·63	4·34	3·24	5·19	5·07	4·34	2·61	43·74
Lairg	5·08	·43	3·18	4·10	2·93	·26	3·48	2·32	4·28	4·27	4·16	2·03	36·52
Ross and Cromarty—													
Fortrose . . .	3·58	·39	3·51	3·15	2·55	·22	2·06	1·26	2·90	3·96	3·13	2·25	28·96
Ardross Castle . .	5·56	·36	3·84	5·75	3·38	·55	2·86	1·43	3·93	5·94	4·38	3·26	41·24
Lochcarron . . .	12·36	1·07	4·20	7·42	2·49	1·83	7·08	6·21	8·84	10·09	9·25	7·52	78·36
Stornoway . . .	10·45	·59	2·95	3·87	1·50	1·56	2·81	4·58	4·76	5·38	4·59	3·84	46·88
Inverness—Kingussie .	5·92	·19	2·18	3·58	3·17	·55	3·52	1·67	2·61	6·66	4·51	3·38	37·94
Inverness . . .	4·29	·55	2·39	3·29	3·09	·22	2·87	1·09	3·41	4·87	3·49	2·28	31·84
Fort-William . .	17·69	·18	3·74	5·78	2·95	·87	8·35	4·61	7·86	11·25	13·16	12·55	88·94
Glenquoich . . .	21·63	·54	5·00	9·72	3·93	2·55	10·74	6·86	12·93	16·72	18·02	12·25	120·89
Portree . . .	12·47	·84	3·23	5·36	2·65	2·48	4·46	4·42	9·56	9·05	7·50	8·56	70·58
Nairn—Nairn . . .	2·76	·44	2·41	3·13	2·62	·10	2·57	2·01	2·22	4·59	2·77	1·86	27·48
Moray—Gordon Castle .	1·66	·61	2·74	2·97	2·07	·29	2·61	1·52	3·34	6·54	3·09	1·68	29·12
Grantown . . .	2·24	·60	3·42	4·47	3·82	·51	3·97	1·10	3·80	5·80	3·03	2·21	34·97
Banff—Banff . . .	1·85	·24	1·94	2·31	1·23	·41	2·57	1·57	3·14	6·22	2·17	1·19	24·84
Aberdeen—Fyvie Castle	2·59	·98	3·88	4·04	2·46	·93	3·25	1·03	3·65	7·91	2·53	1·17	34·42
Peterhead . . .	1·75	·68	3·61	3·86	1·61	·67	2·15	1·30	3·44	6·74	2·07	1·44	29·26
Aberdeen (King's Coll.)	1·83	·32	4·15	2·94	2·82	1·13	3·41	2·10	3·59	6·59	1·65	1·41	31·94
Balmoral . . .	4·16	·41	2·42	4·07	4·40	·88	3·24	·91	2·62	8·22	2·22	3·49	37·04
Kincardine—													
Balmakewan . . .	1·84	·16	2·98	3·21	3·18	1·00	3·69	1·00	2·01	6·57	1·47	2·32	29·43
Angus—													
Montrose (Asylum) .	1·32	·16	2·78	2·78	2·85	·99	3·57	·69	2·28	6·83	1·33	2·09	27·67
Dundee	1·88	·10	2·57	2·31	3·00	1·06	3·42	·93	1·62	6·69	1·38	3·25	28·21
Glamis Castle . .	2·63	·08	2·76	2·53	3·27	·97	2·92	·89	2·32	6·70	1·54	3·95	30·56
Brechin	1·95	·20	2·79	3·30	3·24	1·15	4·86	·97	2·42	7·18	1·43	2·59	32·08
Perth—Blair Castle .	4·43	·14	2·71	3·73	2·80	·73	4·38	1·82	1·92	6·62	2·49	5·05	36·82
Crieff	5·86	·16	2·85	3·37	3·16	1·15	4·38	1·64	2·05	5·87	2·43	8·06	40·98
Perth	2·70	·16	2·53	2·83	2·74	1·07	2·54	·99	1·79	5·97	1·20	4·44	28·96
Fife—Cupar . . .	2·31	·07	2·34	2·53	3·03	1·30	3·52	·55	1·61	6·21	1·64	4·44	29·55
Kirkcaldy . . .	2·28	·11	2·75	2·03	2·69	1·61	2·66	·56	2·59	5·28	1·87	5·10	29·53
Kinross—Loch Leven .	3·09	·11	2·44	2·35	3·81	1·60	3·43	·42	2·68	5·97	1·93	6·46	34·29
Clackmannan—													
Tillicoultry . . .	4·53	·08	2·60	3·34	3·42	1·07	3·51	1·34	3·10	5·47	2·40	6·21	37·07
Argyll—Gruline (Mull) .	14·09	·53	4·74	7·18	3·21	3·76	6·04	4·40	7·50	12·58	7·59	10·99	82·61
Oban	9·55	·06	3·10	3·71	2·67	1·08	4·41	3·29	5·10	9·40	7·01	7·04	56·42
Glencoe Gardens . .	17·74	·23	4·39	5·82	4·25	1·84	7·50	4·26	9·07	10·26	11·90	13·63	90·89
Inveraray . . .	15·18	·03	4·87	8·13	3·52	1·71	7·86	4·44	8·57	11·98	10·76	14·50	91·55
Campbeltown . .	4·72	·13	2·91	5·53	2·80	2·35	4·20	2·56	4·90	7·61	3·82	6·83	48·36
Bute—Rothesay . .	10·07	·22	3·10	5·04	2·97	1·83	4·48	4·47	4·96	9·10	5·14	7·27	58·65
Stirling—Stirling . .	5·92	·03	1·99	4·13	3·41	1·50	2·41	1·28	2·98	5·65	2·82	7·99	40·11
Dumbarton—Arrochar .	18·82	·14	5·62	10·45	3·93	3·50	7·05	4·96	7·41	13·13	9·48	15·81	100·30
Helensburgh . .	8·52	·02	2·47	4·27	3·15	1·24	3·27	2·73	4·43	7·15	5·74	9·16	52·15
Renfrew—Greenock .	10·42	·00	2·42	5·82	2·76	1·76	3·09	3·26	5·77	7·45	7·25	12·21	62·21
Paisley	7·02	·01	1·82	3·91	2·98	1·25	2·37	1·48	3·92	6·52	4·00	8·60	43·88
Ayr—Kilmarnock . .	6·95	·05	2·79	3·29	2·84	1·42	4·44	2·17	4·75	6·00	3·81	7·22	45·73
Ayr	5·09	·00	2·26	3·08	2·61	1·55	2·97	1·46	4·47	4·68	3·11	6·94	38·22
Muirkirk . . .	9·56	·10	3·64	4·81	2·86	2·19	4·27	2·23	6·35	7·09	4·38	7·66	55·14
Pinmore . . .	5·65	·05	3·46	3·49	3·30	1·99	5·37	1·84	5·59	7·67	4·60	8·38	51·39
Lanark—													
Glasgow (University) .	6·07	·04	1·87	3·24	3·08	·87	3·32	1·55	3·36	5·64	2·95	6·68	38·67
Biggar	5·46	·22	2·51	3·05	2·59	1·25	3·22	·67	3·98	5·62	2·64	7·38	38·59
Lesmahagow . .	6·37	·10	2·40	3·03	2·41	2·00	2·83	1·09	4·49	5·40	3·62	8·09	41·83
Linlithgow—													
Uphall (Houston House)	4·88	·15	2·29	3·31	3·36	1·55	2·52	·81	3·09	5·18	2·68	6·67	36·49
Mid-Lothian—													
Edinburgh (University)	2·93	·18	2·63	1·88	2·92	1·11	2·06	·43	2·27	5·66	1·75	4·62	28·44
Gorebridge . . .	3·02	·59	3·52	2·11	2·83	1·17	2·40	·48	2·73	5·79	1·55	4·70	29·89
Oxenfoord Castle . .	2·58	·50	2·66	2·09	2·49	1·20	2·35	·50	2·58	6·21	1·52	4·31	28·99
Haddington—													
North Berwick . .	1·40	·33	2·73	1·07	2·18	1·03	2·12	·28	1·84	5·25	1·40	2·32	21·95
Stobshiels Reservoir .	2·15	1·23	2·32	1·54	2·30	·93	2·88	·43	1·77	7·27	1·12	2·89	26·83
Berwick—Duns Castle .	1·81	·82	3·53	2·46	2·43	1·54	2·00	·81	3·64	6·83	1·13	1·75	28·75
Marchmont . . .	2·13	·67	3·17	2·29	2·32	1·42	2·40	·75	3·54	6·05	1·19	1·81	27·74
Peebles—West Linton .	6·23	·25	3·20	3·89	3·61	1·20	2·90	1·17	4·10	6·31	2·97	6·50	42·33
Selkirk—Whitmuir Hall	3·55	·76	2·91	2·77	2·12	1·21	4·32	1·46	4·28	5·36	1·92	4·72	35·38
Roxburgh—Branxholme	5·82	·26	2·84	3·10	2·45	1·49	3·70	1·68	4·18	5·40	1·90	5·47	38·29
Kelso (Broomlands) .	2·13	·30	2·47	2·29	1·93	1·07	2·48	1·02	3·86	4·70	1·02	1·70	24·97
Dumfries—Dumfries .	5·24	·07	2·96	2·54	2·59	1·93	3·12	1·86	4·05	6·02	2·65	7·19	40·22
Moniaive . . .	9·37	·07	2·88	4·92	3·48	2·11	4·82	2·31	5·28	8·37	4·73	12·67	61·01
Langholm . . .	8·31	·19	3·96	4·55	3·75	2·40	6·22	1·46	7·04	7·38	3·90	8·34	57·50
Eskdalemuir . .	12·17	·18	4·19	5·30	3·39	1·38	8·29	2·11	6·20	9·18	5·55	13·37	71·31
Kirkcudbright—													
Dalbeattie (Kirkennan)	8·05	·13	3·30	4·18	4·68	1·48	4·64	2·55	5·55	7·54	3·92	8·94	54·96
Carsphairn (Shiel) .	12·76	·17	4·22	7·35	3·55	2·71	5·89	2·51	8·61	11·04	7·94	16·83	83·58
Auchencairn. . .	6·86	·08	3·26	4·89	3·49	1·29	4·26	2·50	5·64	7·35	4·14	5·93	49·69
Wigtown—Monreith .	3·07	·01	2·78	2·65	3·30	1·25	2·72	2·08	6·16	5·91	2·88	5·45	38·26

AGRICULTURAL STATISTICS.—RETURNED UPON 4TH JUNE 1932—(*Compiled from the Government Returns*)

TABLE NO. 1.—ACREAGE UNDER CROPS AND GRASS IN EACH COUNTY OF SCOTLAND.

Counties.	Total Acreage under Crops and Grass.	Arable Land.	Permanent Grass.	Corn Crops.								Potatoes.	Turnips and Swedes.	Mangolds.	Sugar Beet.	Cabbage.	Rape.	Vetches or Tares (Seed).	Vetches, Tares, Beans, Mashlum, &c. (Fodder).	Small Fruit.	Rye-grasses and other Rotation Grasses and Clover.	Other Crops.	Bare Fallow.
				Wheat.	Barley, including Bere.	Oats.	Mixed Grain.	Rye.	Beans.	Peas.	Total.												
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Acres.	Acres.	Acres.	Acres.
1. Aberdeen	621,482	570 162	51,320	9	5,781	174,856	14	49	4	49	180,762	8,096	74,226	1	1	228	67	3	1,885	247	304,043	322	281
2. Angus	243,135	209,793	33,342	11,344	6,535	57,895	30	206	57	14	76,081	19,760	26,552	14	43	236	142	3	447	1,467	84,716	238	94
3. Argyll	113,203	50,325	62,878	5	580	13,947	70	267	2	4	14,875	2,657	4,389	4	..	39	151	1	46	14	27,760	63	326
4. Ayr	304,816	125,926	178,890	632	18	33,288	21	12	99	12	34,082	9,200	6,259	181	1	216	432	..	603	182	74,288	279	203
5. Banff	156,184	142,198	13,986	7	3,521	44,872	7	15	24	6	48,452	1,762	17,911	..	1	9	40	16	505	13	78,371	16	102
6. Berwick	188,137	119,274	68,863	1,672	7,613	26,482	63	4	213	6	36,053	2,306	16,942	107	1	49	912	..	226	23	62,584	17	54
7. Bute	25,778	14,226	11,552	8	1	3,950	..	19	1	3	3,982	1,065	1,067	4	..	8	33	..	11	7	7,956	16	77
8. Caithness	103,649	79,427	24,222	..	331	25,558	..	8	..	11	25,908	1,036	9,507	..	..	22	..	2	186	2	42,673	7	84
9. Clackmannan	15,144	7,264	7,880	190	26	2,714	..	..	177	..	3,107	399	680	1	5	8	4	1	105	81	2,819	2	52
10. Dumfries	240,842	117,597	123,245	41	76	32,188	10	6	..	1	32,322	3,451	12,813	84	..	100	488	1	186	48	68,020	72	12
11. Dunbarton	44 485	19,928	24,557	342	20	5,639	8	..	..	..	6,009	2,282	1,161	6	..	56	167	..	90	89	9,962	50	56
12. East Lothian	108,040	79,293	28,747	4,819	10,460	14,966	57	..	13	204	30,519	8,497	10,671	306	71	982	271	3	275	263	26,473	816	146
13. Fife	235,123	152,679	82,444	11,321	7,292	40,442	215	391	259	28	59,948	16,954	18,030	26	419	171	363	9	500	276	55,314	198	476
14. Inverness	148,911	81,045	67,866	9	2,648	28,207	724	681	..	1	32,270	4,585	7,977	..	..	106	22	..	131	16	34,955	58	925
15. Kincardine	116,755	104,263	12,492	997	3,104	31,691	5	2	2	4	35,865	4,539	13,894	..	13	14	66	..	268	62	49,462	56	24
16. Kinross	31,653	19,621	12,032	201	64	6,015	6	38	..	..	6,324	1,266	2,005	..	..	16	81	1	41	8	9,858	6	15
17. Kirkcudbright	178,710	76,774	101,936	32	37	18,486	9	..	..	1	18,565	1,428	7,836	36	..	55	788	1	85	29	47,794	80	77
18. Lanark	237,672	120,434	117,238	1,674	46	32,953	4	20	17	47	34,761	6,899	8,260	23	..	522	874	3	410	1,198	66,439	685	410
19. Mid-Lothian	115,574	71,216	44,358	4,404	2,391	19,195	32	2	..	66	26,090	6,367	7,791	28	6	441	498	2	155	174	29,109	457	98
20. Moray	96,334	87,915	8,419	674	4,403	26,210	57	227	24	1	31,596	1,794	12,164	6	17	14	36	4	374	17	41,751	84	58
21. Nairn	25,020	23,077	1,943	32	897	6,901	3	6	1	1	7,846	275	3,507	..	5	4	..	..	68	2	11,332	11	27
22. Orkney	107,864	91,568	16,296	..	2,746	29,457	4	14	..	..	32,221	2,015	12,204	..	..	12	..	1	137	..	44,899	7	72
23. Peebles	51,037	20,978	30,059	7	14	4,978	..	..	..	1	5,000	327	2,346	..	..	21	432	2	46	36	12,757	6	5
24. Perth	318 068	205,905	112,163	7,147	1,118	59,324	66	457	620	14	68,746	18,818	20,124	18	56	186	506	8	796	3,309	92,521	107	710
25. Renfrew	78,421	28,499	49,922	1,273	32	7,813	..	3	20	12	9,153	3,302	1,658	4	..	137	157	..	34	99	13,686	165	104
26. Ross & Cromarty	137,731	105,482	32,249	829	2,963	32,747	63	141	4	1	36,748	7,011	12,641	6	15	255	55	39	325	14	47,975	53	345
27. Roxburgh	174,169	104,185	69,984	935	4,295	22,074	37	2	16	3	27,362	1,337	14,333	36	..	73	362	3	130	34	60,390	31	94
28. Selkirk	29,910	13,266	16,644	5	21	3,048	2	..	..	..	3,076	138	1,857	2	..	10	57	..	8	4	8,114	..	..
29. Stirling	109,936	45,800	64,136	1,511	108	15,446	40	35	1,100	3	18,243	3,609	3,081	4	..	96	344	4	623	152	18,944	57	643
30. Sutherland	30,729	20,674	10,055	..	130	6,399	5	5	..	1	6,540	975	2,310	1	..	6	4	2	22	1	10,697	6	110
31. West Lothian	58,600	29,985	23,615	1,872	1,021	9,819	43	..	23	1	12,779	2,612	2,760	10	6	53	249	2	156	46	11,143	24	145
32 Wigtown	153,474	94,501	58,973	80	37	24,048	3	10	61	10	24,249	1,820	10,563	164	5	27	147	2	186	7	57,123	83	125
33 Zetland	26,631	12,883	13,748	..	479	5,766	10	4	..	..	6,259	1,957	945	..	..	644	..	..	15	..	2,535	3	525
Total	4,622,217	3,046,163	1,576,054	52,072	68,868	867,374	1613	2624	2737	505	995,793	148,539	348,464	1072	665	4816	7748	118	9075	7920	1,511,463	4020	6475

TABLE No. 2.—TOTAL PRODUCE OF WHEAT AND BARLEY, ACREAGE and YIELD per Acre in the Year 1932, compared with the YIELD for the Year 1931, and the AVERAGE of the Ten Years, 1922-1931, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.								BARLEY, INCLUDING BERE.							
	Total Produce in 1932.		Acreage in 1932.	Yield per acre.				Average of the Ten Years, 1922-1931.	Total Produce in 1932.		Acreage in 1932.	Yield per acre.				Average of the Ten Years, 1922-1931.
				1932.		1931.						1932.		1931.		
	Qrs.	Tons.	Acres.	Bush.	Cwt.	Bush.	Cwt.	Bush.	Qrs.	Tons.	Acres.	Bush.	Cwt.	Bush.	Cwt.	Bush.
Aberdeen	30	6	9	36.0	16.1	..	..	*29.9	26,000	5,100	5,781	36.0	17.7	33.4	16.2	32.3
Angus	54,000	12,000	11,344	37.8	21.3	33.4	18.6	36.7	31,000	6,000	6,535	37.7	18.4	35.2	17.0	36.6
Argyll	25	5	5	40.0	21.4	32.0	11.4	..	2,200	400	580	30.0	13.8	32.4	15.1	33.4
Ayr	3,800	810	632	47.8	25.7	44.4	23.9	45.5	70	12	18	31.2	13.8	35.7	17.1	36.9
Banff	25	5	7	30.6	15.4	..	..	..	17,000	3,300	3,521	38.9	18.9	37.6	18.2	39.0
Berwick	8,000	1,750	1,672	38.3	21.0	31.2	16.6	38.7	38,000	7,200	7,613	39.7	18.8	31.8	14.5	35.0
Bute	40	9	8	42.0	21.4	..	..	§34.4	5	1	1	42.0	19.5	38.4	17.2	39.0
Caithness	..	..	..	..	..	..	..	..	1,400	250	331	34.6	15.4	34.9	15.8	36.5
Clackmannan	1,100	250	190	47.2	26.1	43.7	24.4	40.8	150	30	26	48.6	23.9	42.6	20.9	39.3
Dumfries	260	60	41	49.7	27.0	37.0	20.1	38.9	360	60	76	37.8	16.9	34.3	15.3	37.0
Dunbarton	1,900	420	342	44.6	24.3	40.8	21.1	37.4	90	16	20	35.4	15.6	24.0	10.7	*31.8
East Lothian	28,000	6,100	4,819	45.8	25.5	38.7	20.8	44.0	64,000	13,000	10,460	48.7	24.2	41.5	19.9	46.5
Fife	60,000	13,400	11,321	42.6	23.8	32.5	17.5	35.6	42,000	8,200	7,292	45.6	22.4	34.6	16.0	39.4
Inverness	40	9	9	36.0	19.3	36.0	19.9	*38.8	9,000	1,700	2,648	27.1	12.6	28.9	13.5	27.1
Kincardine	4,700	1,000	997	37.8	21.2	32.7	17.5	36.4	13,000	2,500	3,164	33.2	15.9	31.2	14.3	35.8
Kinross	1,000	230	201	41.5	23.0	38.6	21.5	37.9	320	60	64	39.3	19.2	39.6	19.7	35.3
Kirkcudbright	160	35	32	39.9	22.4	37.2	20.6	36.7	180	35	37	37.8	18.9	31.7	15.4	36.1
Lanark	7,800	1,700	1,674	37.1	20.0	34.9	18.3	36.1	200	40	46	35.5	16.9	32.3	14.7	32.4
Mid-Lothian	24,000	5,300	4,404	43.7	24.2	40.5	21.3	44.7	13,000	2,600	2,391	44.0	21.7	41.1	18.9	43.8
Moray	3,600	830	674	43.3	24.7	41.3	23.0	41.8	21,000	4,100	4,403	38.1	18.6	38.2	18.7	38.6
Nairn	150	30	32	37.0	19.8	..	..	..	3,000	570	897	27.2	12.8	31.3	14.8	31.5
Orkney	..	..	..	..	..	..	..	..	13,000	2,300	2,746	38.2	16.7	38.2	16.8	34.9
Peebles	40	8	7	40.0	22.1	40.0	21.4	..	70	14	14	40.0	19.6	38.0	17.0	36.4
Perth	38,600	8,400	7,147	43.2	23.5	36.6	19.7	37.3	6,200	1,200	1,118	44.4	21.7	39.5	19.4	36.8
Renfrew	6,700	1,400	1,273	42.3	22.7	42.4	22.4	41.9	140	27	32	36.0	16.7	36.0	16.1	*36.0
Ross and Cromarty	4,500	970	829	43.6	23.4	39.5	21.6	42.2	12,000	2,100	2,963	31.8	14.5	32.1	14.9	33.6
Roxburgh	4,500	1,000	935	39.0	21.9	30.0	16.3	38.0	20,000	4,100	4,295	37.9	19.1	32.2	16.0	36.8
Selkirk	20	4	5	30.0	16.1	30.0	16.1	‡36.0	90	17	21	33.8	16.6	24.0	11.8	33.1
Stirling	6,600	1,500	1,511	35.0	19.4	35.1	18.7	35.2	520	100	108	38.8	19.2	35.9	17.3	33.4
Sutherland	..	..	..	..	..	..	..	..	620	120	180	38.2	18.6	37.8	18.4	37.3
West Lothian	10,500	2,300	1,872	44.9	24.6	38.7	20.8	45.0	5,900	1,200	1,021	45.9	22.6	42.3	19.9	46.7
Wigtown	480	100	80	48.8	26.5	..	..	§36.7	200	40	37	44.2	22.1	35.6	17.3	41.5
Zetland	..	..	..	..	..	..	..	..	1,600	300	479	27.3	12.6	30.8	14.2	30.8
Total all Scotland	270,570	59,631	52,072	41.5	23.0	35.6	19.2	38.6	342,315	66,692	68,868	39.7	19.3	35.3	16.8	37.1

* Average of 9 years only. § Average of 8 years only. ‡ Average of 5 years only.

TABLE NO. 3.—TOTAL PRODUCE OF OATS, ACREAGE and YIELD per Acre in the Year 1932, compared with the YIELD for the Year 1931, and the AVERAGE of the Ten Years, 1922-1931, in each COUNTY OF SCOTLAND.

COUNTIES	OATS.							
	Total Produce in 1932.		Acreage in 1932.	Yield per acre.				Average of the Ten Years, 1922-1931.
				1932		1931.		
	Qrs.	Tons.	Acres	Bush.	Cwt	Bush	Cwt.	Bush.
Aberdeen . .	979,000	149,000	174,856	44.8	17.0	38.3	14.3	37.1
Angus . . .	869,000	56,000	57,895	51.0	19.5	47.0	17.5	49.1
Argyll . . .	70,000	10,000	13,947	40.1	14.3	38.5	13.6	37.1
Ayr . . .	208,000	30,000	33,288	49.9	17.9	47.0	16.7	46.9
Banff . . .	263,000	40,000	44,872	46.8	17.6	42.1	16.0	43.5
Berwick . . .	129,000	19,000	26,482	38.8	14.7	34.0	12.6	39.2
Bute . . .	22,000	3,200	3,950	44.9	16.1	43.0	15.3	41.6
Caithness . .	113,000	16,000	25,558	35.5	12.8	36.0	12.6	35.2
Clackmannan .	22,000	3,200	2,714	63.9	23.9	47.4	17.6	45.1
Dumfries . .	180,000	26,000	32,188	44.6	16.2	37.0	13.4	39.9
Dunbarton . .	31,000	4,600	5,639	44.6	16.4	41.5	14.5	41.7
East Lothian .	112,000	17,000	14,966	60.0	23.0	52.4	19.1	55.7
Fife . . .	290,000	44,000	40,442	57.5	21.8	44.2	16.4	47.2
Inverness . .	113,000	16,000	28,207	32.0	11.8	31.6	11.1	28.9
Kincardine . .	199,000	31,000	31,691	50.2	19.4	42.6	15.4	46.0
Kinross . . .	40,000	6,000	6,015	53.6	20.0	46.1	16.7	41.3
Kirkcudbright .	94,000	14,000	18,486	40.9	14.6	38.8	13.5	35.8
Lanark . . .	174,000	25,000	32,953	42.2	15.4	38.9	13.8	41.3
Mid-Lothian . .	130,000	20,000	19,195	54.2	20.3	51.0	18.5	50.4
Moray . . .	155,000	24,000	26,210	47.4	18.6	41.0	15.4	42.2
Nairn . . .	34,000	5,000	6,901	38.9	14.5	39.6	14.8	35.6
Orkney . . .	145,000	20,000	29,457	39.3	13.8	39.0	13.7	35.5
Peebles . . .	26,000	3,800	4,978	42.1	15.8	37.6	13.0	40.0
Perth . . .	381,000	56,000	59,324	51.3	19.0	43.6	15.9	44.9
Renfrew . .	41,000	6,000	7,813	41.5	15.4	40.6	14.5	39.9
Ross and Cromarty	166,000	25,000	32,747	40.6	15.0	38.7	14.2	39.9
Roxburgh . .	129,000	19,000	22,074	46.7	17.0	39.4	14.3	39.9
Selkirk . . .	14,000	2,100	3,048	38.0	13.7	33.0	11.8	34.2
Stirling . . .	88,000	13,000	15,446	45.6	17.4	38.0	13.9	47.1
Sutherland . .	29,000	4,300	6,399	36.4	13.4	36.4	13.4	35.8
West Lothian .	65,000	9,800	9,819	53.4	20.0	49.0	18.1	53.2
Wigtown . .	164,000	25,000	24,048	54.5	20.8	43.8	16.4	38.6
Zetland . . .	18,000	2,500	5,766	24.4	8.8	31.3	11.2	27.6
Total all Scotland	4,993,000	745,500	867,374	46.1	17.2	40.7	14.9	41.3

TABLE NO. 4.—TOTAL PRODUCE OF BEANS AND POTATOES, ACREAGE and YIELD per Acre in the Year 1932, compared with the YIELD for BEANS for the Year 1931 and for POTATOES for the Years 1931 and 1930, and the AVERAGE of the Ten Years, 1922-1931, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.								POTATOES.					
	Total Produce in 1932.		Acreage in 1932.	Yield per acre.				Average of the Ten Years, 1922-1931.	Total Produce in 1932.	Acreage in 1932.	Yield per acre.			Average of the Ten Years, 1922-1931.
				1932.		1931.					1932.	1931.	1930.	
	Qrs.	Tons.	Acres.	Bush.	Cwt.	Bush.	Cwt	Bush.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	13	3	4	23.4	15.1	17.0	9.1	15.2	59,000	8,096	7.2	5.1	5.3	6.0
Angus	290	65	57	41.5	23.2	44.5	25.1	41.2	144,000	19,760	7.3	4.9	6.8	6.6
Argyll	14	3	2	44.4	23.0	41.5	21.5	*36.5	16,000	2,657	5.9	4.4	5.6	5.3
Ayr	410	90	99	33.2	17.7	32.0	16.0	35.5	31,000	9,200	8.8	7.6	9.3	8.4
Banff	90	20	24	30.9	17.3	22.8	12.8	21.9	12,000	1,762	6.6	4.9	5.4	5.8
Berwick	880	190	213	32.9	18.2	32.6	17.6	30.5	15,000	2,306	6.6	4.1	5.5	5.6
Bute	4	1	1	40.0	20.4	38.0	19.0	36.1	7,500	1,065	7.0	5.7	7.0	6.4
Caithness	..	..	..	..	..	..	..	..	7,400	1,036	7.2	5.3	6.1	5.8
Clackmannan	940	210	177	42.6	24.0	38.0	21.4	37.4	2,600	399	6.5	4.2	5.9	6.0
Dumfries	..	..	..	..	..	..	..	..	30,000	3,451	8.7	5.6	8.0	7.2
Dunbarton	..	..	..	..	..	..	..	†26.2	18,000	2,282	8.1	5.9	7.6	7.1
East Lothian	50	11	13	28.8	16.2	32.3	17.7	35.2	68,000	8,497	8.1	5.7	8.1	7.4
Fife	1,300	290	259	40.8	22.7	34.2	19.0	37.2	159,000	16,954	9.4	5.2	7.6	6.7
Inverness	..	..	..	..	..	..	..	..	26,000	4,585	5.8	4.8	5.7	4.3
Kincardine	7	2	2	36.0	21.2	24.9	13.1	31.2	29,000	4,539	6.4	4.9	5.9	6.0
Kinross	..	..	..	..	..	..	..	..	8,200	1,266	6.5	4.0	5.7	6.2
Kirkcudbright	..	..	.	..	.	33.0	13.3	*32.5	9,200	1,428	6.5	4.9	7.6	7.0
Lanark	80	16	17	36.0	18.6	..	..	..	52,000	6,899	7.6	5.5	7.3	6.9
Mid-Lothian	..	..	..	..	..	38.0	21.4	§35.2	51,000	6,367	8.0	6.6	7.9	7.5
Moray	120	26	24	38.2	21.5	23.9	13.4	26.3	13,000	1,794	7.0	5.4	5.8	6.1
Nairn	5	1	1	24.0	12.4	..	..	..	1,500	275	5.5	4.3	4.7	4.6
Orkney	.	..	..	..	..	..	..	..	11,000	2,015	5.4	7.6	5.8	5.6
Peebles	..	..	..	..	..	..	..	..	2,500	327	7.8	5.9	7.5	7.0
Perth	2,300	530	620	29.9	17.0	30.1	15.9	32.7	145,000	18,818	7.7	5.0	6.9	6.4
Renfrew	100	22	20	40.0	21.4	40.0	21.4	40.5	26,000	3,302	7.9	7.7	7.6	8.2
Ross and Cromarty	16	3	4	32.0	17.2	30.0	16.1	‡21.3	46,000	7,011	6.6	5.4	6.4	5.8
Roxburgh	60	13	16	30.6	16.4	21.9	12.0	27.3	12,000	1,337	9.1	4.6	8.0	6.4
Selkirk	..	..	..	..	..	..	..	..	1,200	138	8.6	3.8	6.6	5.9
Stirling	4,800	1,100	1,100	35.0	19.3	24.0	12.8	31.6	32,000	3,609	9.0	6.0	6.6	7.9
Sutherland	..	..	..	..	..	..	..	..	6,500	975	6.7	4.7	6.3	5.6
West Lothian	110	25	23	38.4	21.8	32.0	17.8	36.5	22,000	2,612	8.3	5.9	8.4	7.7
Wigtown	250	50	61	32.5	17.4	29.6	15.9	25.5	17,000	1,820	9.4	5.0	7.9	6.7
Zetland	..	..	..	..	..	..	..	..	11,000	1,957	5.7	5.9	8.2	5.8
Total	11,842	2,671	2,737	34.7	19.3	29.5	15.9	32.8	1,141,600	148,539	7.7	5.5	7.0	6.6

* Average of 9 years only. † Average of 7 years only. ‡ Average of 6 years only. § Average of 8 years only.

TABLE No. 5.—TOTAL PRODUCE of TURNIPS, SWEDES, and MANGOLDS, ACREAGE and YIELD per Acre in the Year 1932, compared with the YIELD for the Years 1931 and 1930, and the AVERAGE of the Ten Years, 1922-1931, in each COUNTY of SCOTLAND.

COUNTIES	TURNIPS AND SWEDES.						MANGOLDS.					
	Total Produce in 1932.	Acreage in 1932.	Yield per Acre.			Average of the Ten Years, 1922-1931.	Total Produce in 1932.	Acreage in 1932.	Yield per Acre.			Average of the Ten Years, 1922-1931.
			1932.	1931.	1930.				1932.	1931.	1930.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	1,031,000	74,226	13.9	15.6	11.8	15.2	20	1	11.0	11.7	..	11.0§
Angus	503,000	26,552	18.9	14.4	15.1	17.7	170	14	12.3	12.0	19.0	15.8
Argyll	73,000	4,389	16.6	15.4	17.0	14.9	50	4	12.5	13.6	16.7	12.6
Ayr	130,000	6,259	20.8	16.9	21.0	18.9	3,900	181	21.5	19.8	21.8	20.1
Banff	279,000	17,911	15.6	16.6	16.8	16.0	..	..	..	16.0	12.0	..
Berwick	343,000	16,942	20.2	15.0	15.1	18.4	2,000	107	18.2	15.5	22.3	17.5
Bute	18,000	1,067	17.2	14.0	17.0	15.0	70	4	16.0	13.9	16.9	13.2*
Caithness	182,000	9,507	19.2	17.0	17.8	18.6	..	..	..	..	..	..
Clackmannan	8,500	680	12.8	10.4	12.5	15.1	20	1	20.0	..	24.0	..
Dumfries	236,000	12,813	18.4	17.2	19.9	18.3	1,300	84	16.3	15.0	17.0	16.5
Dunbarton	23,000	1,161	20.0	15.4	16.8	17.6	140	6	23.9	15.0	21.9	19.1
East Lothian	199,000	10,671	18.6	16.7	19.6	19.9	6,900	306	22.6	16.3	22.4	20.4
Fife	236,000	18,030	13.1	11.2	16.0	17.7	450	26	17.1	15.0	18.7	17.5
Inverness	104,000	7,977	13.1	13.0	13.0	13.0	..	..	..	..	..	...
Kincardine	211,000	13,894	15.2	16.1	18.1	19.4	..	..	..	..	..	..
Kinross	29,000	2,005	14.6	7.8	11.5	15.2	..	..	..	..	24.0	..
Kirkcudbright	120,000	7,836	15.3	12.3	16.4	15.2	580	33	15.9	14.2	16.7	15.9
Lanark	157,000	8,260	19.1	18.4	21.4	19.4	510	23	22.5	17.7	20.3	17.3
Mid-Lothian	143,000	7,791	18.3	16.5	19.0	18.6	520	28	18.3	19.0	21.4	21.0
Moray	272,000	12,164	22.4	15.9	15.8	16.5	120	6	20.5	19.5	20.0	16.4
Nairn	45,000	3,507	12.8	12.1	12.6	12.9	..	..	..	..	..	..
Orkney	141,000	12,204	11.5	11.1	12.4	10.8	..	..	..	..	..	..
Peebles	42,000	2,346	18.0	17.2	20.4	18.9	..	..	..	15.0	..	..
Perth	381,000	20,124	18.9	16.0	17.8	17.2	330	18	18.1	11.3	15.0	13.5
Renfrew	32,000	1,658	19.1	18.9	18.6	18.0	90	4	20.0	20.0	20.0	18.5
Ross and Cromarty	185,000	12,641	14.6	14.9	15.8	16.0	80	6	12.0	12.0	14.0	14.8
Roxburgh	268,000	14,333	18.7	12.8	14.6	15.6	840	36	23.4	13.2	13.3	13.0
Selkirk	32,000	1,857	17.4	11.4	13.5	15.8	50	2	22.4	14.0	10.0	14.0‡
Stirling	53,000	3,081	17.2	12.0	17.1	19.9	50	4	12.0	8.0	9.7	18.9
Sutherland	41,000	2,310	17.7	11.9	17.7	15.4	20	1	12.0	8.0	..	..
West Lothian	52,000	2,760	19.0	16.6	19.9	19.5	190	10	20.3	15.0	20.8	21.1
Wigtown	201,000	10,563	19.0	16.2	16.4	16.2	3,500	164	21.4	15.0	21.9	16.9
Zetland	9,500	945	10.2	8.2	5.9	11.6	..	..	..	..	..	..
Total	5,780,000	348,464	16.6	15.1	15.6	16.6	21,900	1,072	20.4	16.2	20.8	18.2

* Average of 9 years only ‡ Average of 6 years only. § Average of 8 years only.

TABLE No. 6.—TOTAL PRODUCE OF HAY from Rye-Grass and other Rotation Grasses and Clover, also Total from Permanent Grass, ACREAGE, and YIELD per Acre in the Year 1932, compared with the YIELD for the Years 1931 and 1930, and the AVERAGE of the Ten Years, 1922-1931, in each COUNTY of SCOTLAND.

COUNTIES.	FROM RYE-GRASS AND OTHER ROTATION GRASSES AND CLOVER.						FROM PERMANENT GRASS.					
	Total Produce in 1932.	Acreage in 1932.	Yield per Acre.			Average of the Ten Years, 1922-1931.	Total Produce in 1932.	Acreage in 1932.	Yield per Acre.			Average of the Ten Years, 1922-1931.
			1932	1931.	1930.				1932.	1931.	1930.	
	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.
Aberdeen	63,000	54,071	23.3	28.6	24.1	27.6	1,940	1,880	20.5	21.2	18 3	22.3
Angus	45,000	22,317	40.3	39.2	37.5	37.4	2,500	1,541	32.8	30.0	30.8	30.1
Argyll	16,000	12,067	27.3	32.4	30.6	30.6	18,800	14,849	24.8	27.9	27.7	28.9
Ayr	42,000	25,425	32.6	33.3	32.1	32.5	45,000	20,729	43.6	42.7	42.4	41.3
Banff	15,000	11,030	27.7	29.4	27.9	29 7	500	467	21.5	21.2	20.6	21.5
Berwick	22,000	11,456	37.7	33 4	31.4	34 6	5,560	3,235	33.3	31.0	28.4	27.1
Bute	4,000	2,243	35.6	35.4	35 6	36.2	640	388	35.2	32.4	33.2	33.5
Caithness	9,000	9,731	18.5	18 8	15.2	18.2	560	1,477	7.6	9.1	8.0	8.5
Clackmannan	3,100	1,149	54.3	45.8	47.8	44.5	4,470	1,596	56.3	58.2	57.2	48.0
Dumfries	33,000	19,325	34.2	35.8	32.6	31 9	28,400	19,850	29.1	29.8	28.6	29.2
Dunbarton	8,600	4,762	36 3	40.8	41.6	38.0	4,200	2,450	34.6	39.9	41.2	35.9
East Lothian	22,000	8,622	50.4	48.2	50.1	49.2	1,740	1,198	29.1	29.6	30.5	34.7
Fife	62,000	24,431	50.9	50.2	41.9	41.4	9,100	4,318	42.2	37.8	34.8	38.4
Inverness	11,000	11,391	20.1	22.3	21.0	22.3	7,005	10,664	13.1	18.5	13.7	19.4
Kincardine	21,000	12,746	32.2	36 8	31.8	35.6	500	401	25.0	27.8	24.5	29.2
Kinross	7,300	2,846	51.4	42.4	40.0	40.1	1,630	828	39.4	34.4	34.4	36.1
Kirkcudbright	14,000	10,424	26.6	29.0	25.7	27.2	17,800	12,988	27.1	26.9	25.2	25.4
Lanark	52,000	29,305	35.2	36.8	32.2	35.2	22,600	13,039	35.0	34.2	30.2	32.9
Mid-Lothian	25,000	10,222	48.4	47.4	48.0	47.6	2,600	1,630	32.4	31.2	34.3	35.8
Moray	12,000	6,404	35.9	20.7	19.4	21.6	151	144	20.5	19.2	18.8	18.2
Nairn	1,700	1,775	19.7	21.7	18.7	20.5	70	103	14.3	15.1	14.0	16.4
Orkney	20,000	11,067	36.7	36.8	34.2	25.3	990	1,133	17.5	14.4	14.4	11.7
Peebles	4,600	2,513	36.5	39.4	32.9	34.6	1,580	1,204	26.5	27.3	28.7	31.0
Perth	49,000	31,155	31.3	32.1	28.1	31.0	19,400	12,388	30.8	31.4	29.9	29.5
Renfrew	15,000	7,112	43.5	43.1	41.8	40.8	13,900	5,826	49.1	42.2	43.5	42.7
Ross and Cromarty	13,000	12,212	21.2	25.0	21.2	21.7	3,004	3,467	17.3	19.4	16.2	16.5
Roxburgh	16,000	10,080	32.6	29.6	31.8	33.5	9,900	7,786	25.3	22.3	29 5	31.4
Selkirk	1,900	1,364	28.1	28.6	27.2	36.0	2,410	2,095	23.3	24.6	29.3	36.0
Stirling	16,000	9,314	34.8	37.1	42.4	40.6	20,100	8,324	47.6	50.7	50.8	46.2
Sutherland	4,000	4,503	19 8	22.3	18.2	20.1	1,500	1,787	16.4	18.4	16.2	16.9
West Lothian	15,000	6,155	49.2	48.3	49.9	46.5	1,950	932	42.4	37.3	49 8	41.5
Wigtown	13,000	8,086	33.3	32.9	28.1	30.9	8,700	5,631	30.7	31.1	30.4	30.6
Zetland	2,300	1,813	25 2	29.5	28.9	27.8	1,800	2,106	17.2	18.2	20.3	18.5
Total	658,500	397,116	33.2	34.4	31·7	32.8	260,920	166,454	31.4	32.1	31.5	31.8

TABLE No. 7.—HAY from Permanent Grass:—TOTAL PRODUCE, ACREAGE, and YIELD PER ACRE, in 1932, in each COUNTY OF SCOTLAND, distinguishing HAY from TIMOTHY MEADOWS and HAY from OTHER MEADOWS.

COUNTIES.	TIMOTHY MEADOWS.			OTHER MEADOWS.		
	Total Produce in 1932.	Acreage in 1932.	Yield per Acre in 1932.	Total Produce in 1932.	Acreage in 1932.	Yield per Acre in 1932.
	Tons.	Acres.	Cwt.	Tons.	Acres.	Cwt
Aberdeen	40	20	36·0	1,900	1,860	20·3
Angus	360	180	39 7	2,200	1,361	31·9
Argyll	860	540	31·7	18,000	14,309	24 5
Ayr	28,000	11,251	49 4	17,000	9,478	36·7
Banff	..	..	..	500	467	21·5
Berwick	160	103	31·6	5,200	3,132	33 4
Bute	150	83	36·5	490	305	32·3
Caithness	..	..	..	560	1,477	7·6
Clackmannan	3,560	1,182	59·6	970	414	46·8
Dumfries	6,400	3,882	33·1	22,000	15,968	28·1
Dunbarton	1,700	779	43·9	2,500	1,671	30·2
East Lothian	440	175	50·4	1,300	1,028	25·4
Fife	4,200	1,488	55·9	4,900	2,830	35·0
Inverness	5	4	26·0	7,000	10,660	13·1
Kincardine	.	.	..	500	401	25·0
Kinross	690	263	52·7	940	565	33·3
Kirkcudbright	4,800	2,510	38·1	13,000	10,478	24·4
Lanark	14,000	6,993	40 6	8,600	6,046	28·5
Mid-Lothian	1,300	560	48·2	1,300	1,070	24·1
Moray	11	5	45.0	140	139	19·6
Nairn	..	..	..	70	103	14·3
Orkney	.	..	..	990	1,133	17·5
Peebles	580	289	40·2	1,000	915	22·2
Perth	8,400	3,707	45·3	11,000	8,681	24·6
Renfrew	10,000	3,994	51·9	3,900	1,832	43·1
Ross and Cromarty	4	3	26·0	3,000	3,464	17·3
Roxburgh	400	279	29·0	9,500	7,507	25·2
Selkirk	110	85	26·4	2,300	2,010	23·1
Stirling	17,000	5,997	55·6	3,100	2,327	26·9
Sutherland	.	..		1,500	1,787	16·4
West Lothian	1,600	604	53·7	350	328	21·7
Wigtown	1,900	944	39·4	6,800	4,687	28·9
Zetland	..	..	.	1,800	2,106	17·2
Total	106,610	45,920	46·5	154,310	120,534	25·6

TABLE No. 8.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON 4TH JUNE 1932

COUNTIES.	HORSES (including Ponies).					CATTLE.							SHEEP.				PIGS.		
	Used solely for Agriculture, &c.*	Stallions.†	Unbroken Horses. 1 Year & above.	Unbroken Horses. Under 1 Year.	Other Horses.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Bulls used for Service.	Other Cattle. 2 Years & above.	Other Cattle. 1 Year & under 2 Years.	Other Cattle. Under 1 Year.	Ewes kept for Breeding.	Rams to be used for Service.	1 Year Old and above.	Under 1 Year.	Sows kept for Breeding.	Boars used for Service.	Other Pigs.
1. Aberdeen . .	17,856	48	2,632	922	2,144	37,157	3,611	2,825	1,689	38,456	51,796	37,554	167,293	5,109	44,817	212,213	2,453	251	17,818
2. Angus . . .	6,663	1	316	111	475	10,050	999	839	443	15,466	14,001	8,535	89,869	2,935	21,870	102,232	1,087	127	6,985
3. Argyll . . .	3,489	7	474	159	352	15,978	2,374	1,895	839	6,600	9,846	13,147	349,601	10,491	97,198	259,795	411	53	3,388
4. Ayr . . .	5,810	26	761	290	761	41,250	7,549	12,351	2,408	8,853	20,970	22,225	187,706	4,910	45,841	175,725	1,145	99	10,269
5. Banff . . .	5,137	9	875	299	554	10,524	1,093	704	524	4,993	12,501	10,978	46,731	1,431	13,555	55,433	856	95	5,104
6. Berwick . .	3,040	11	304	96	481	4,071	514	1,100	327	5,411	8,820	5,148	151,818	3,793	40,212	214,892	706	106	3,734
7. Bute . . .	769	3	117	47	99	2,533	413	623	181	1,149	2,105	2,129	21,130	617	6,632	16,797	57	6	532
8. Caithness . .	3,454	9	495	183	359	5,667	620	361	149	1,586	4,705	5,503	79,975	2,222	22,760	90,191	184	22	1,218
9. Clackmannan .	371	3	59	20	69	1,156	216	150	60	810	1,044	551	5,907	205	803	5,966	65	10	397
10. Dumfries . .	4,279	9	676	272	600	19,851	3,101	6,277	1,264	9,289	16,726	17,716	263,546	6,828	63,934	255,651	1,340	107	7,870
11. Dunbarton . .	1,013	19	122	43	120	5,036	1,259	1,075	291	1,142	2,401	2,285	34,202	1,009	9,458	27,537	134	15	1,169
12. East Lothian .	2,488	3	202	47	149	2,540	360	405	157	5,794	4,904	2,368	62,824	1,713	26,286	82,632	541	65	3,017
13. Fife . . .	5,713	21	714	233	695	11,105	2,074	1,678	660	10,881	12,977	9,180	65,419	2,022	13,355	83,946	1,233	175	7,215
14. Inverness . .	5,158	24	512	171	499	15,957	2,654	1,229	538	3,336	7,665	11,504	241,991	6,752	74,327	183,578	254	40	1,591
15. Kincardine . .	3,184	7	301	92	466	5,753	505	417	345	5,853	9,065	5,550	32,261	958	5,559	39,352	306	37	2,397
16. Kinross . .	661	1	120	36	34	1,880	230	216	84	772	2,115	1,244	15,396	523	3,728	16,367	69	9	619
17. Kirkcudbright .	2,768	15	478	189	295	17,150	1,592	5,965	980	8,413	14,480	12,311	176,028	4,908	48,230	173,720	1,051	131	10,585
18. Lanark . .	4,910	31	582	187	579	26,991	7,170	6,191	1,666	7,069	12,221	12,362	108,889	2,964	30,767	103,505	915	90	6,811
19. Mid-Lothian .	2,442	6	154	48	375	7,139	976	655	249	3,334	4,145	2,491	79,815	1,868	27,323	93,386	1,713	155	11,423
20. Moray . . .	3,038	20	340	106	216	5,958	581	419	243	3,639	7,857	5,395	24,063	594	6,693	25,569	487	45	4,129
21. Nairn . . .	806	1	122	49	153	1,910	160	145	108	451	1,301	2,039	6,360	222	3,585	6,168	139	15	715
22. Orkney . .	4,617	21	589	273	742	9,525	1,153	910	251	4,350	10,346	9,682	27,009	773	5,930	35,825	178	22	1,618
23. Peebles . .	594	1	52	24	82	1,723	299	488	155	1,121	1,758	1,487	96,420	2,311	19,909	93,324	74	14	556
24. Perth . . .	7,811	38	775	239	787	15,229	2,156	2,132	912	11,690	21,191	16,640	304,483	9,239	74,795	268,960	1,032	123	7,077
25. Renfrew .	1,652	10	181	62	285	10,379	2,688	2,322	619	1,740	3,698	3,714	21,310	635	5,236	21,039	418	47	3,954
26. Ross & Cromarty	4,677	5	465	118	457	13,611	2,075	1,181	395	3,421	7,582	7,684	148,629	4,163	63,152	129,106	432	50	2,628
27. Roxburgh . .	2,627	8	275	58	592	5,149	863	955	360	6,241	7,034	5,421	237,095	5,883	64,571	281,362	330	40	2,414
28. Selkirk . .	424	1	41	9	69	1,098	185	163	75	490	1,088	972	86,612	2,007	19,314	83,702	44	8	333
29. Stirling . .	2,565	13	325	132	374	8,529	2,211	2,012	535	6,219	9,084	5,464	60,002	1,692	15,205	55,238	349	39	2,455
30. Sutherland . .	1,536	5	89	25	129	3,479	603	250	75	504	1,603	1,856	91,901	2,331	40,896	76,572	33	5	392
31. West Lothian .	1,323	5	201	47	158	4,086	907	607	234	2,453	2,485	2,064	9,910	239	3,844	12,830	355	36	2,308
32. Wigtown . .	3,159	15	655	254	296	24,989	1,281	3,848	1,077	7,880	10,294	11,942	67,383	2,095	15,876	69,782	1,324	149	13,105
33. Zetland . .	1,657	12	169	59	1,474	4,227	631	307	58	716	1,825	2,407	81,035	2,631	27,300	62,302	7	2	204
Total . . .	115,696	408	14,173	4,900	14,920	351,290	53,458	60,705	17,956	190,121	300,184	259,548	3,442,613	96,133	962,961	3,414,717	19,772	2,183	143,370

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE No. 9.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1930.	1931.	1932.	1930.	1931.	1932.
Wheat from—	Cwt.	Cwt.	Cwt.	£	£	£
Soviet Union (Russia)	18,717,260	28,930,956	3,273,105	5,751,955	6,596,355	905,380
United States . .	21,035,748	11,241,671	4,627,153	9,126,985	3,014,448	1,459,831
Argentine Republic .	15,188,752	20,733,709	20,562,947	6,788,152	5,074,310	6,181,840
British India . .	3,341,551	481,665	..	1,391,356	138,302	..
Australia . . .	12,712,993	23,299,598	24,159,138	5,645,775	6,058,693	7,620,189
Canada . . .	26,178,553	27,097,560	46,878,559	11,370,653	7,688,531	14,635,436
Other countries . .	7,599,886	7,633,333	6,181,675	2,989,287	1,810,451	1,723,322
Total . .	104,774,738	119,418,582	105,627,577	43,064,163	30,376,090	32,475,496
Wheat, meal, and flour, from—						
France . . .	1,184,101	1,012,956	437,517	525,188	275,056	136,981
United States . .	3,175,752	2,077,583	459,841	2,010,459	905,152	236,503
Argentine Republic .	586,728	717,127	478,606	192,728	188,481	137,380
Australia . . .	1,709,630	2,558,335	2,829,641	947,502	875,892	1,067,791
Canada . . .	4,488,382	3,894,610	3,971,674	2,725,498	1,639,683	1,848,400
Other countries . .	583,641	486,477	339,485	244,832	151,124	103,103
Total . .	11,728,234	10,747,088	8,516,714	6,646,207	4,035,388	3,530,158
Barley	15,207,759	15,423,116	10,132,925	4,593,812	4,136,283	2,958,521
Oats	9,631,091	8,753,194	6,468,027	2,409,111	1,923,767	1,835,434
Peas, not fresh . .	1,360,142	1,705,168	1,461,946	1,039,786	1,142,643	1,273,648
Beans, not fresh . .	732,852	927,426	953,571	722,558	502,132	496,827
Maize	34,164,670	53,261,331	52,820,698	9,934,857	9,919,098	11,474,560
Maize products . .	2,770,550	2,184,754	2,957,261	1,001,313	665,403	846,160
Oat products . . .	595,343	879,905	779,407	614,821	760,059	720,248
Rice—						
From Spain . .	502,406	477,055	439,173	370,927	293,543	305,939
From United States .	276,815	336,138	299,934	304,125	318,782	278,277
From British India .	971,916	885,971	1,141,063	526,405	342,460	475,141
From other countries	537,016	700,340	571,648	326,877	304,674	337,470
Other kinds of grain .	401,594	339,001	245,299	190,290	113,898	99,200
Other products . .	508,732	548,025	510,031	447,770	430,863	398,164
Malt	42,630	38,183	27,818	38,796	29,266	25,105
Farinaceous substances not elsewhere specified	713,885	830,596	997,261	572,013	523,738	515,291
Total of corn, &c.	68,417,901	87,285,203	79,806,057	23,093,461	21,406,559	22,040,000

TABLE No. 10.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1931 and 1932.

Years.	Australian.	South African.	English Fleeces.
	Per lb. s. d.	Per lb. s. d.	Per lb. s. d. s. d.
1931	0 9¾	0 10¼	0 5⅞ to 0 9⅝
1932	0 9	0 9¼	0 5¼ ,, 0 9¾

Table No. 11.—Quantities and Values of Corn, Meat, Food Products, and Articles affecting Agriculture, imported into the United Kingdom in the Year 1932, with the Corresponding Figures for 1930 and 1931.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1930.	1931	1932.	1930.	1931.	1932.
Animals, Living:—	No.	No.	No.	£	£	£
Cattle	840,561	766,523	642,630	14,332,302	12,615,945	8,944,107
Sheep and lambs . . .	567,192	561,165	440,871	1,366,143	1,186,106	677,433
Pigs	414,587	478,941	302,760	2,619,266	2,212,612	1,035,756
Total value .	1,822,340	1,806,629	1,386,261	18,317,811	16,014,663	10,657,206
Grain, Flour, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	104,774,738	119,418,582	105,627,577	43,064,163	30,376,090	32,475,498
Wheat meal and flour . .	11,728,234	10,747,088	8,516,714	6,046,207	4,085,888	3,580,158
Barley	15,207,759	15,423,116	10,132,925	4,593,812	4,136,233	2,958,521
Oats	9,631,091	8,753,194	6,468,027	2,409,111	1,923,767	1,835,434
Peas, not fresh . . .	1,360,142	1,705,168	1,461,946	1,039,786	1,142,643	1,273,643
Beans, not fresh . . .	732,852	927,426	953,571	722,558	502,132	496,827
Maize or Indian corn . .	34,164,670	53,261,331	52,820,698	9,934,857	9,919,098	11,474,560
Maize products . . .	2,770,550	2,184,754	2,957,261	1,001,313	665,403	846,180
Oat products . . .	595,343	879,905	779,407	614,821	760,059	720,248
All other products . .	508,732	548,025	510,031	447,770	430,863	398,164
Malt	42,630	33,183	27,813	38,796	29,266	25,105
Rice	2,288,153	2,399,504	2,451,818	1,528,334	1,259,459	1,396,827
Other kinds of grain . .	401,594	339,001	245,299	190,290	113,898	99,200
Farinaceous substances not elsewhere specified	713,885	830,596	997,261	572,013	523,738	515,291
Total value .	184,920,873	217,450,873	198,950,348	72,803,831	55,818,037	58,045,656
Meat:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	8,885	5,840	4,062	26,412	13,012	6,919
*Beef	11,600,648	11,989,438	11,369,398	30,058,004	25,492,122	22,801,630
*Mutton	6,404,454	7,132,286	6,971,496	19,758,833	18,367,997	15,774,029
Bacon	9,191,182	11,133,676	11,405,932	41,151,972	33,129,521	30,229,530
Hams	1,003,026	831,149	803,353	4,960,335	3,217,422	2,729,571
Pork, salted (not bacon or hams)	84,893	66,908	34,209	142,565	109,271	50,243
*Pork	641,161	748,504	602,755	2,741,267	2,432,129	1,658,971
Tinned, canned extracts, including tongue	1,483,035	1,469,051	1,143,302	7,742,083	6,122,636	3,942,338
All other kinds . . .	374,420	397,789	414,825	1,052,073	909,227	886,313
*Rabbits (dead) . . .	289,641	388,732	575,595	745,222	715,585	764,471
Total of dead meat .	31,081,345	34,163,373	33,324,922	108,378,266	90,508,922	78,844,015
Dairy Produce:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	6,821,620	8,060,068	8,449,108	46,869,697	46,297,585	41,481,061
Margarine	846,193	692,951	92,387	2,421,903	1,924,024	199,135
Cheese	3,112,316	2,885,794	3,006,549	12,602,974	9,062,707	9,099,739
Total .	10,780,129	11,638,813	11,548,044	61,894,574	57,284,316	50,779,935
	Gt. Hunds.	Gt. Hunds.	Gt. Hunds.	£	£	£
Eggs in Shell	26,541,280	25 925,201	19,976,462	16,377,646	13,773,082	9,061,697
	Cwt.	Cwt.	Cwt.			
Eggs not in Shell . . .	851,278	800,760	811,861	3,408,219	2,878,421	2,771,103
Total value .	..	..	..	19,785,865	16,651,508	11,882,800

* Fresh, Chilled, and Frozen.

TABLE No. 11—*Continued.*

	Quantities.			Values.		
	1930.	1931.	1932.	1930.	1931.	1932.
POULTRY (alive or dead).	..	..	..	£ 3,065,241	£ 3,319,662	£ 2,453,208
GAME (alive or dead)	..	..	..	82,568	76,66	88,094
Total value	..	..	..	3,147,809	3,396,326	2,541,302
FRUIT, VEGETABLES, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Apples	6,171,524	7,598,533	8,117,689	7,552,186	7,879,044	7,933,728
Cherries	59,511	58,533	12,092	132,026	148,575	39,599
Plums, Greengages, Damsons	389,181	513,265	345,414	790,401	920,764	651,363
Pears	1,029,367	1,237,242	1,115,925	1,723,051	1,758,499	1,521,324
Grapes	695,302	944,258	906,959	1,841,829	1,886,471	1,563,353
Oranges	10,207,164	10,391,489	9,354,823	9,547,867	9,548,350	7,674,855
Lemons, Limes, &c.	1,478,645	1,409,624	1,462,127	1,415,837	1 256,518	1,359,246
Bananas	Bunches. 14,989,564	Bunches. 16,161,900	Bunches. 17,122,777	5,664,135	5,538,683	4,408,333
Fruit (unenumerated)	Cwt. 1,375,769	Cwt. 1,771,590	Cwt. 1,563,961	2,480,262	2,739,289	2,362,803
Onions	Bushels. 10,783,703	Bushels. 10,170,550	Bushels. 9,997,276	1,590,874	1,756,018	1,843,578
Potatoes	Cwt. 5,781,574	Cwt. 16,653,213	Cwt. 15,576,775	2,680,814	6,961,841	5,908,838
Tomatoes	3,052,101	2,936,436	2,442,509	4,545,237	4,563,718	4,356,346
Vegetables, unenumerated (raw)	..	..	..	1,713,136	1,691,012	1,059,857
Total value	..	..	..	41,627,155	46,648,732	40,683,338
OTHER ARTICLES:—	Tons.	Tons.	Tons.	£	£	£
Lard	125,250	127,435	120,998	6,853,243	5,910,839	4,799,919
Wool—sheep and lambs'	Centals. 7,822,868	Centals. 8,482,289	Centals. 9,208,643	42,474,201	32,715,067	32,564,242
Wood and timber—	Loads.	Loads.	Loads.			
Pit-props or pit-wood	2,783,106	1,900,175	1,918,340	5,192,802	3,070,289	2,928,578
Sawn soft	4,849,159	4,265,838	4,220,272	20,662,712	14,679,222	13,050,481
Staves	91,298	45,492	26,111	657,062	368,743	196,725
Oilseed-cake and meal	Tons. 454,807	Tons. 458,626	Tons. 423,785	2,945,440	2,394,653	2,315,578
Seeds—	Cwt.	Cwt.	Cwt.			
Clover and grass	254,395	254,604	246,876	622,966	595,944	521,250
Cotton	Tons. 516,699	Tons. 502,258	Tons. 429,714	3,650,270	2,804,850	2,600,698
Flax or linseed	223,299	338,156	364,371	3,694,092	3,157,294	3,070,418
Rape	9,935	21,931	24,805	114,827	182,662	257,585
Soya beans	91,309	110,300	158,935	894,995	725,553	1,107,084
Bones (whether burnt or not)	5,582	5,429	6,336	43,390	31,354	36,460
Guano	16,775	7,920	12,897	104,303	65,450	82,445
Basic slag	33,783	49,421	9,736	81,429	106,128	19,769
Superphosphates	105,476	112,085	58,702	269,083	269,458	132,251
Phosphate of lime and rock phosphate	457,915	258,692	353,010	619,255	338,926	458,575
Nitrate of soda	Cwt. 904,505	Cwt. 1,619,293	Cwt. 227,673	419,482	656,958	78,299
Cotton, raw of 100 lb.	Centals. 12,130,036	Centals. 10,906,188	Centals. 12,521,767	43,721,828	26,270,817	30,254,607
Hemp	Tons. 83,394	Tons. 84,609	Tons. 64,631	2,538,091	1,769,221	1,280,026
Flax	40,807	43,217	48,274	3,005,348	1,912,454	2,184,977
Hides untanned—	Cwt.	Cwt.	Cwt.			
Dry	558,428	396,408	352,629	2,031,846	1,112,126	900,646
Wet	741,849	877,347	905,266	2,297,755	2,213,097	1,856,738
Petroleum (refined)	Gallons. 1,942,783,951	Gallons. 1,862,856,944	Gallons. 1,890,932,681	42,160,187	26,022,044	27,996,668
Petroleum (crude)	460,968,094	344,370,004	368,397,387	4,286,644	2,974,562	3,355,839

TABLE No. 12.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1930.	1931.	1932.	1930.	1931.	1932.
	Cwt.	Cwt.	Cwt.	£	£	£
BACON, from—						
Sweden	550,278	576,924	430,248	2,418,478	1,706,589	1,118,079
Denmark	6,117,866	7,839,195	7,672,030	27,635,729	22,393,767	20,946,400
Poland	488,295	1,076,610	1,142,524	1,883,839	2,704,807	2,667,981
Netherlands	842,309	999,900	971,567	3,756,644	2,888,047	2,416,530
United States	479,097	189,027	63,318	2,096,890	620,623	181,495
Irish Free State	330,679	296,841	199,530	1,738,499	1,155,188	633,195
Canada	99,298	49,495	182,683	488,759	150,397	528,737
Other countries	288,360	605,684	744,032	1,133,139	1,515,108	1,787,118
Total	9,191,182	11,183,676	11,405,932	41,151,972	33,129,521	30,229,580
BEEF (salted)—						
Total	8,885	5,840	4,062	26,412	13,012	6,919
BEEF (fresh and refrigerated)—						
United States	45,959	60,297	47,466	228,278	242,437	189,314
Uruguay	1,142,799	1,017,796	699,849	2,945,548	2,131,410	1,411,928
Argentine Republic	8,463,431	8,570,147	8,462,068	22,322,630	19,039,267	17,703,337
Australia	796,984	1,136,278	957,589	1,775,349	1,837,933	1,418,662
New Zealand	311,220	382,178	578,881	686,905	595,312	776,069
Other countries	840,255	822,742	623,545	2,099,294	1,645,768	1,302,820
Total	11,600,648	11,989,438	11,369,893	30,058,004	25,492,122	22,801,680
HAMS, from—						
United States	820,404	600,631	465,210	4,059,803	2,381,476	1,645,128
Canada	84,034	72,488	143,500	448,244	297,895	505,673
Other countries	98,588	158,030	194,648	452,288	538,051	578,770
Total	1,003,026	831,149	803,353	4,960,335	3,217,422	2,729,571
TINNED, CANNED EXTRACTS—						
Beef	1,188,366	1,140,439	814,496	5,362,397	4,300,799	2,581,165
Mutton	49,827	47,363	39,701	213,654	166,040	127,132
Pork	149,403	165,293	146,602	1,339,520	1,283,988	850,588
,, Other descriptions	95,439	115,956	142,503	826,512	371,809	383,458
Total	1,483,035	1,469,051	1,143,302	7,742,083	6,122,636	3,942,338
ALL OTHER KINDS—						
Tinned or Canned	47,882	30,500	29,290	253,978	153,666	128,779
Salted	67	205	15	174	463	53
Other descriptions	326,471	367,084	385,520	797,921	755,098	757,481
Total	374,420	397,789	414,825	1,052,078	909,227	886,313
MUTTON (fresh and refrigerated)—						
Uruguay	423,327	284,300	163,690	1,186,955	707,282	375,617
Argentine Republic	1,452,043	1,553,309	1,385,720	4,113,617	3,758,619	2,951,939
Australia	810,170	1,529,345	1,156,034	2,485,749	3,595,650	2,505,301
New Zealand	3,292,842	3,469,761	3,915,865	10,931,915	9,634,502	9,258,249
Other countries	426,072	295,571	350,187	1,040.097	671,944	682,923
Total	6,404,454	7,132,286	6,971,496	19,758,333	18,367,997	15,774,029
PORK (salted), from—						
Denmark	61,856	47,164	20,090	72,005	52,137	15,184
United States	16,993	14,808	6,775	55,507	45,860	18,613
Other countries	6,044	4,936	7,344	15,053	11,274	16,446
Total	84,893	66,908	34,209	142,565	109,271	50,243
PORK (fresh and refrigerated)—						
Irish Free State	289,315	382,899	262,151	1,241,972	1,258,626	728,682
New Zealand	136,945	121,803	181,142	541,914	351,563	315,977
Argentine Republic	74,109	81,220	108,984	319,445	277,521	317,498
United States	108,408	62,273	32,542	518,262	247,451	112,878
Other countries	32,384	100,309	67,986	119,674	296,968	183,941
Total	641,161	748,504	602,755	2,741,267	2,432,129	1,658,971
RABBITS (dead), from—						
Belgium	31,301	25,630	17,865	161,650	128,797	91,895
Irish Free State	17,920	13,720	4,754	55,587	39,988	12,322
Australia	209,785	315,832	513,928	435,227	475,865	585,807
New Zealand	18,919	27,900	31,275	33,732	48,071	42,665
Other countries	11,716	6,150	7,778	54,026	27,864	31,782
Total	289,641	388,732	575,595	745,222	715,585	764,471
Total of dead meat	31,081,345	34,163,373	33,324,922	108,378,266	90,508,922	78,844,015

TABLE No. 13.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND EGGS imported into the United Kingdom in each Year from 1930 to 1932 inclusive.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1930.	1931.	1932.	1930.	1931.	1932.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Soviet Union (Russia)	165,451	404,369	322,887	1,005,260	1,969,244	1,234,873
Finland	233,510	254,071	216,620	1,596,699	1,486,898	1,080,170
Estonia	96,338	125,384	83,153	640,875	666,984	337,916
Sweden	279,565	211,733	175,723	1,970,773	1,272,517	891,742
Denmark	2,318,525	2,466,070	2,583,664	17,102,544	15,639,722	13,424,927
Netherlands	89,094	96,117	46,998	659,401	598,349	248,616
Argentine Republic	414,050	373,934	390,445	2,574,220	2,047,282	1,661,995
Irish Free State	521,963	381,028	314,635	3,275,412	2,111,488	1,433,770
Australia	950,582	1,557,952	1,829,254	6,017,014	8,350,206	8,753,284
New Zealand	1,564,436	1,925,611	2,190,338	10,785,724	10,773,553	11,151,310
Other countries	188,106	263,799	295,391	1,241,775	1,381,342	1,262,458
Total	6,821,620	8,060,068	8,449,108	46,869,697	46,297,585	41,481,061
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands	820,479	661,138	72,485	2,333,505	1,836,890	150,997
Irish Free State	19,177	17,280	15,516	68,575	51,108	37,578
Other countries	6,537	14,533	4,386	19,823	36,026	10,560
Total	846,193	692,951	92,387	2,421,903	1,924,024	199,135
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands	183,076	168,219	169,932	673,741	573,934	454,609
Italy	144,650	131,783	106,094	692,022	637,034	449,009
Australia	47,685	68,036	73,534	174,439	193,348	211,975
New Zealand	1,960,901	1,732,620	1,852,743	7,821,634	4,947,571	5,445,397
Canada	678,294	706,725	747,272	2,699,918	2,322,269	2,265,429
Other countries	97,710	78,411	56,974	541,220	388,551	273,320
Total	3,112,316	2,885,794	3,006,549	12,602,974	9,062,707	9,099,739
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Soviet Union (Russia)	84,842	262,444	87,174	31,191	83,688	23,965
Sweden	491,168	339,003	361,361	327,858	184,710	171,406
Denmark	6,728,383	7,548,661	6,392,542	4,698,356	4,406,132	2,971,145
Poland (including Dantzig)	3,612,564	2,687,069	1,874,311	1,580,326	1,015,020	625,830
Netherlands	3,680,696	3,839,248	1,399,781	2,634,118	2,270,342	649,474
Belgium	2,333,656	2,072,937	1,584,045	1,545,282	1,154,797	738,246
France	658,731	96,680	18,653	390,614	52,528	9,698
Egypt	451,479	220,937	246,635	170,561	71,589	76,472
China	1,712,568	1,497,184	853,175	887,298	646,586	351,762
Irish Free State	4,781,096	4,575,107	3,932,521	2,711,038	2,269,568	1,694,578
British South Africa	474,079	589,302	527,785	393,834	418,974	349,383
Australia	554,653	918,206	1,514,708	425,835	582,213	894,013
Other countries	977,365	1,278,423	1,183,771	581,335	616,935	505,725
Total	26,541,280	25,925,201	19,976,462	16,377,646	13,773,082	9,061,697

TABLE No. 14.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND PIGS imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1930.	1931.	1932.	1930.	1931.	1932.
CATTLE, from—				£	£	£
Irish Free State . .	834,962	738,967	625,906	14,200,326	12,048,496	8,597,881
Canada	5,193	26,991	16,724	122,077	553,749	346,226
Other countries . .	406	565	..	9,899	13,700	..
Total . . .	840,561	766,523	642,630	14,332,302	12,615,945	8,944,107
SHEEP AND LAMBS, from—						
Irish Free State . .	567,192	561,165	440,871	1,366,143	1,186,106	677,433
Other countries . .	..	..	..	..	..	..
Total . . .	567,192	561,165	440,871	1,366,143	1,186,106	677,433
PIGS, from—						
Irish Free State . .	414,587	478,941	302,760	2,619,366	2,212,612	1,035,756
Other countries . .	..	..	..	..	..	..
Total . . .	414,587	478,941	302,760	2,619,366	2,212,612	1,035,756

TABLE No. 15.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1926-1932.

	1926.	1927.	1928.	1929.	1930.	1931.	1932.
†HORSES:—							
Stallions . .	411	457	480	495	467	407	367
Mares . .	5,209	4,655	4,290	3,952	4,037	3,862	3,699
Geldings . .	5,954	5,855	4,956	4,395	4,528	4,101	4,029
Total . .	11,574	10,967	9,726	8,842	9,032	8,370	8,095
CATTLE: Oxen, Bulls, and Cows:—							
Fat . . .	257,934	284,498	319,983	339,512	301,128	268,677	223,901
Store . . .	393,161	348,723	419,682	414,308	511,249	431,659	404,169
Other cattle .	46,607	53,679	65,267	71,031	81,609	67,806	55,633
Calves . .	22,742	25,892	49,255	57,618	72,155	65,298	61,201
Total . .	720,444	712,792	854,187	882,469	966,141	833,440	744,904
SHEEP:—							
Sheep. . .	216,502	273,383	269,675	250,328	260,711	316,847	227,975
Lambs . .	306,860	367,660	401,062	412,456	389,446	355,448	350,588
Total . .	523,362	641,043	670,737	662,784	650,157	672,295	578,563
PIGS:—							
Fat . . .	185,565	338,961	293,355	265,147	355,166	424,067	241,458
Store . . .	1,698	4,871	1,492	3,648	3,557	5,393	3,580
Total . .	187,263	343,832	294,847	268,795	358,723	429,460	245,038

† Not including Army Horses.

EDINBURGH CORN MARKET.

Statement showing the Prices of Wheat, Barley, and Oats for the Year 1932.

The offering of grain by farmers and others in the area of the Market was not resumed during the year. It is hoped that advantage will be taken of the privilege afforded to farmers and merchants of offering grain in the open market, as undoubtedly it enables them to secure the market value, and gives a desirable indication of the true value of the various grains.

The Corn Sales Act of 1921 provides that all sales are to be effected by weight only, and expressed in terms of or by reference to the hundredweight of 112 lb. Experience has proved it to be convenient to quote at a price per 4½ cwt. for Wheat, 4 cwt. for Barley, and 3 cwt. for Oats.

The following statement gives a record of the year's proceedings in Edinburgh Corn Market.

1932.		WHEAT, per 4½ cwt.				BARLEY, per 4 cwt.				OATS, per 3 cwt.			
		Highest.		Lowest.		Highest-		Lowest.		Highest.		Lowest.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	6	31	0	29	0	32	0	24	0	25	0	22	6
"	13	..		..		33	0	22	0	25	6	22	6
"	20	..		.		33	0	23	0	25	6	22	6
"	27	30	0	29	0	32	0	22	0	25	0	22	0
February	3	29	0	28	0	33	0	20	0	24	6	21	6
"	10	29	0	28	0	32	0	22	0	24	6	22	0
"	17	29	0	28	0	33	0	23	6	25	0	22	6
"	24	29	0	28	0	34	0	25	0	25	6	22	6
March	2	30	0	29	0	34	0	26	0	26	0	23	0
"	9	30	0	29	0	35	0	25	0	26	0	23	6
"	16	30	0	29	6	35	0	25	0	25	6	22	6
"	23	29	6	28	6	35	0	25	0	25	6	22	0
"	30	29	0	28	6	35	0	24	0	25	0	22	0
April	6	29	6	29	0	35	0	24	0	25	0	22	0
"	13	29	6	29	0	35	0	25	0	25	0	22	0
"	20	30	6	29	6	34	0	25	0	25	6	22	6
"	27	32	0	31	0	34	0	26	0	26	6	23	6
May	4	30	6	30	0	34	0	26	0	26	6	24	0
"	11	30	6	30	0	32	0	26	0	26	9	24	0
"	18	31	0	30	0	32	0	26	0	26	6	24	0
"	25	31	0	30	0	32	0	26	0	26	0	24	0
June	1	29	6	28	6	32	0	25	0	26	0	24	0
"	8	28	6	28	0	31	0	23	0	25	6	23	6
"	15	27	6	26	6	30	0	22	0	25	0	23	0
"	22	27	6	26	6	..		..		24	6	22	6
"	29	27	6	27	0	..		..		24	6	22	6
July	6	28	0	27	0	..		..		24	6	22	6
"	13	27	6	27	0	..		.		24	6	22	6
"	20	28	0	27	0	..		..		24	6	22	0
"	27	28	6	27	6	..		..		24	6	22	0
August	3	29	0	27	0	..		..		24	6	22	0
"	10	30	0	27	0	..		..		24	6	22	0
"	17	30	0	27	0	..		..		..		..	
"	24	29	0	28	0	..		..		21	0	19	0
"	31	29	0	28	0	30	0	26	0	21	0	19	0
September	7	29	0	28	0	29	0	26	0	21	0	18	6
"	14	30	0	27	0	30	0	29	0	21	0	19	6
"	21	27	0	26	0	28	0	21	0	20	0	18	0
"	28	27	0	26	0	30	0	21	0	18	6	17	6
October	5	26	6	26	0	30	0	22	0	18	6	17	0
"	12	26	0	25	0	31	0	24	0	18	6	16	6
"	19	26	0	25	0	31	0	24	0	18	6	17	0
"	26	26	6	25	6	32	0	25	0	18	6	17	0
November	2	26	0	25	0	32	0	26	0	18	6	17	3
"	9	24	0	25	0	31	0	24	0	18	3	17	3
"	16	25	6	25	0	30	0	24	0	17	3	16	0
"	23	25	6	25	0	30	0	23	0	17	3	15	6
"	30	25	6	25	0	29	6	20	0	16	9	15	0
December	7	25	6	25	0	29	0	20	0	16	6	15	6
"	14	25	6	25	0	29	0	20	0	16	9	15	6
"	21	25	6	25	0	29	0	20	0	16	9	15	6
"	28	26	0	25	6	29	0	20	0	16	9	15	6

PRICES OF SHEEP SINCE 1818.

TABLE No. 1.—CHEVIOT SHEEP.

Year.	Wethers.	Ewes.	Lambs.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
1818	28 0 to 30 0	not quoted.	8 0 to 10 0
1819	25 0 " 27 0	15 0 to 17 0	10 6 " 12 0
1820	20 0 " 25 0	16 0 " 17 0	10 0 " 11 0
1821	18 0 " 20 0	14 0 " 16 0	7 6 " 8 0
1822	12 6 " 13 0	8 0 " 8 6	4 6 " 0 0
1823	13 6 " 18 0	7 0 " 10 6	5 6 " 6 0
1824	14 0 " 19 0	7 0 " 9 0	4 6 " 6 0
1825	29 0 " 32 0	15 0 " 19 0	9 0 " 10 6
1826	17 6 " 21 6	13 0 " 15 0	7 0 " 7 6
1827	15 0 " 24 0	not quoted.	7 0 " 8 0
1828	18 0 " 27 6	12 0 to 15 0	7 0 " 8 3
1829	18 0 " 24 0	12 6 " 14 0	7 0 " 8 6
1830	15 0 " 21 0	8 0 " 11 0	6 0 " 6 9
1831	18 0 " 25 0	9 0 " 13 0	7 0 " 8 0
1832	19 0 " 24 0	11 0 " 16 0	7 0 " 9 0
1833	22 0 " 31 0	13 6 " 20 0	8 0 " 11 3
1834	22 0 " 31 0	13 6 " 21 0	9 0 " 11 6
1835	22 0 " 27 6	18 0 " 20 6	8 0 " 11 0
1836	24 0 " 31 6	16 0 " 19 0	10 0 " 14 0
1837	19 0 " 28 0	14 0 " 19 0	10 0 " 13 0
1838	23 0 " 30 6	17 0 " 22 0	12 0 " 14 0
1839	23 0 " 31 0	14 0 " 19 0	0 0 " 13 0
1840	24 0 " 33 0	15 0 " 23 0	7 0 " 11 6
1841	23 0 " 30 0	14 0 " 22 0	8 0 " 12 0
1842	22 6 " 28 0	13 0 " 17 0	7 6 " 10 0
1843	19 0 " 25 0	8 0 " 12 0	5 0 " 8 0
1844	21 0 " 29 0	10 0 " 16 0	8 0 " 10 6
1845	23 0 " 33 0	13 0 " 20 0	8 0 " 13 0
1846	24 0 " 33 6	14 6 " 21 6	10 0 " 14 6
1847	24 0 " 35 0	18 0 " 24 0	11 6 " 15 0
1848	23 0 " 34 6	13 0 " 28 0	11 6 " 15 0
1849	21 0 " 30 2	12 0 " 21 0	0 0 " 14 0
1850	20 6 " 29 6	12 0 " 20 0	8 0 " 13 0
1851	21 6 " 31 0	13 0 " 21 0	8 9 " 14 0
1852	21 0 " 32 0	15 0 " 23 0	8 0 " 14 0
1853	26 6 " 38 0	17 0 " 28 6	9 0 " 17 0
1854	25 0 " 36 0	17 0 " 26 0	9 0 " 16 6
1855	23 6 " 36 0	16 0 " 25 0	10 0 " 17 0
1856	22 0 " 35 6	15 6 " 24 0	10 0 " 15 0
1857	24 0 " 36 0	14 6 " 26 0	10 6 " 14 6
1858	24 0 " 34 6	14 0 " 24 6	10 6 " 14 0
1859	25 0 " 34 6	16 0 " 25 0	10 3 " 14 9
1860	26 0 " 33 0	17 6 " 27 6	12 6 " 17 6
1861	25 0 " 38 6	16 0 " 28 0	9 0 " 16 0
1862	27 0 " 37 6	17 6 " 28 0	10 0 " 16 0
1863	25 0 " 38 6	19 0 " 28 6	10 6 " 16 0
1864	31 0 " 41 0	21 0 " 31 6	14 0 " 18 0
1865	32 6 " 44 0	22 6 " 33 6	14 6 " 20 0
1866	37 0 " 50 0	29 0 " 42 6	15 0 " 26 0
1867	26 0 " 58 0	18 0 " 25 6	12 0 " 16 0
1868	30 0 " 32 0	15 6 " 21 0	7 6 " 13 0
1869	28 0 " 33 0	15 0 " 22 6	7 6 " 14 0
1870	35 6 " 43 0	18 0 " 28 0	10 0 " 17 0
1871	36 6 " 49 0	22 0 " 33 6	14 0 " 20 0
1872	45 0 " 56 0	32 0 " 42 0	16 0 " 22 0
1873	42 0 " 51 0	25 0 " 42 0	15 6 " 22 0
1874	33 6 " 44 6	21 0 " 36 0	12 0 " 17 0
1875	33 0 " 48 6	21 0 " 34 0	13 6 " 23 6
1876	40 0 " 52 6	23 0 " 30 0	13 6 " 25 0
1877	41 0 " 51 0	25 0 " 37 0	15 0 " 24 0
1878	35 6 " 48 0	23 6 " 35 0	14 0 " 22 0
1879	34 0 " 44 0	21 0 " 34 0	14 0 " 20 0
1880	30 0 " 43 6	20 0 " 30 0	12 6 " 20 0
1881	32 0 " 45 6	29 0 " 34 0	14 0 " 20 0
1882	40 0 " 51 0	30 0 " 40 0	14 0 " 20 6
1883	44 0 " 55 6	34 6 " 46 6	15 6 " 23 0
1884	36 0 " 47 6	29 6 " 41 6	12 6 " 20 0
1885	30 0 " 38 0	24 0 " 31 0	12 0 " 18 0
1886	32 0 " 40 0	21 0 " 29 0	12 6 " 19 0

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1887	29	0	to	36	0	18	0	to	26	0	11	0	to	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	18	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	0	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6
1897	27	0	"	36	0	21	0	"	31	6	11	0	"	17	6
1898	27	0	"	37	0	22	0	"	32	6	12	0	"	18	6
1899	24	0	"	33	0	20	0	"	30	6	10	6	"	16	0
1900	26	0	"	36	0	22	0	"	32	6	12	0	"	17	0
1901	25	0	"	32	6	20	0	"	29	6	11	0	"	16	0
1902	24	0	"	31	6	18	0	"	27	0	9	6	"	14	6
1903	26	0	"	34	0	21	0	"	31	0	11	4	"	18	0
1904	28	6	"	36	6	23	0	"	32	6	13	0	"	20	0
1905	27	6	"	35	0	23	0	"	33	0	14	0	"	21	0
1906	30	0	"	38	0	26	0	"	34	6	15	0	"	23	0
1907	28	0	"	34	0	22	0	"	30	6	13	6	"	19	6
1908	26	0	"	32	6	21	0	"	27	6	11	6	"	17	0
1909	24	0	"	31	0	18	0	"	25	6	9	6	"	16	0
1910	27	0	"	35	0	22	0	"	31	0	12	0	"	20	0
1911	24	0	"	31	6	18	6	"	27	6	10	6	"	18	0
1912	26	0	"	34	6	22	0	"	31	0	13	0	"	21	0
1913	30	0	"	39	0	24	0	"	35	6	16	0	"	24	0
1914	32	6	"	41	0	28	0	"	39	0	18	0	"	27	6
1915	36	0	"	46	0	31	0	"	44	0	20	0	"	30	6
1916	40	6	"	51	0	34	0	"	49	0	22	0	"	34	6
1917	43	6	"	56	0	38	0	"	56	0	24	0	"	34	0
1918	50	0	"	66	0	42	0	"	61	0	25	0	"	37	0
1919	53	0	"	69	0	44	6	"	67	0	28	0	"	40	6
1920	56	0	"	91	0	48	0	"	79	0	34	0	"	49	0
1921	45	0	"	60	0	52	3	"	85	9	33	9	"	52	3
1922	40	0	"	56	0	56	0	"	90	6	27	0	"	50	0
1923	44	0	"	65	0	61	0	"	106	0	30	0	"	62	0
1924	41	0	"	61	0	60	0	"	100	0	Ewe lambs— 40 0 to 85 6 Wether lambs— 31 6 to 58 0				
1925	39	3	"	50	0	56	0	"	88	9	Ewe lambs— 36 0 to 82 0 Wether lambs— 22 3 to 50 6				
1926	35	0	"	49	3	34	6	"	64	6	Ewe lambs— 28 6 to 66 6 Wether lambs— 26 3 to 42 0				
1927	28	9	"	46	3	32	6	"	55	6	Ewe lambs— 25 3 to 52 0 Wether lambs— 23 3 to 39 0				
1928	28	3	"	48	6	30	6	"	55	6	Ewe lambs— 23 0 to 45 0 Wether lambs— 22 9 to 47 0				
1929	33	6	"	54	6	34	6	"	62	0	Ewe lambs— 30 6 to 51 9 Wether lambs— 25 6 to 47 0				
1930	36	0	"	54	0	35	0	"	74	6	Ewe lambs— 30 0 to 59 0 Wether lambs— 24 0 to 47 3				
1931	24	0	"	45	6	23	0	"	50	6	Ewe lambs— 21 0 to 57 6 Wether lambs— 17 0 to 37 0				
1932	16	0	"	26	6	18	0	"	36	6	Ewe lambs— 12 0 to 33 0 Wether lambs— 10 6 to 24 6				

TABLE No. 2.—BLACKFACE SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1819	22	0	to	24	0	12	0	to	15	0	8	0	to	9	0
1820	20	0	"	23	8	15	6	"	17	0	7	0	"	8	6
1821	18	0	"	20	0	12	0	"	13	0	6	0	"	7	0
1822	11	6	"	13	6	5	6	"	6	0	4	6	"	0	0
1823	12	0	"	16	0	5	0	"	6	6	4	0	"	5	8
1824	9	6	"	18	6	6	0	"	7	0	4	0	"	5	0
1825	22	0	"	26	0	11	0	"	13	6	6	0	"	9	0
1826	15	0	"	17	0	8	0	"	9	0	4	6	"	6	0
1827	14	0	"	18	6	7	0	"	10	0	6	0	"	7	6
1828	15	0	"	20	0	8	0	"	11	0	5	0	"	7	6
1829	14	0	"	18	0	9	0	"	10	0	6	0	"	7	0
1830	9	6	"	13	0	4	0	"	6	0	4	6	"	6	0
1831	13	0	"	17	0	5	0	"	7	6	5	0	"	6	6
1832	14	0	"	18	0	7	0	"	11	6	6	0	"	7	8
1833	16	0	"	24	0	7	6	"	12	0	6	6	"	9	0
1834	16	0	"	22	0	10	0	"	13	0	6	0	"	8	6
1835	15	0	"	18	9	10	0	"	18	0	7	0	"	8	0
1836	15	0	"	21	0	9	0	"	12	0	8	6	"	11	0
1837	13	0	"	16	0	8	0	"	12	0	8	0	"	9	6
1838	15	0	"	20	6	10	0	"	18	0	not quoted.				
1839	15	0	"	22	0	10	0	"	12	0	7	0	to	8	8
1840	15	0	"	22	6	11	0	"	12	0	7	0	"	9	8
1841	16	0	"	20	0	9	0	"	11	0	6	0	"	8	0
1842	14	0	"	19	0	7	6	"	8	0	5	6	"	7	0
1843	not quoted.					4	9	"	6	6	not quoted.				
1844	15	0	to	21	0	6	6	"	10	0	5	0	to	8	0
1845	14	0	"	23	0	8	0	"	12	0	6	0	"	8	0
1846	13	0	"	24	0	10	0	"	13	0	8	0	"	9	0
1847	20	6	"	25	0	10	0	"	14	0	8	6	"	9	6
1848	20	0	"	24	0	11	8	"	12	0	8	6	"	10	0
1849	not quoted.					not quoted.					7	0	"	7	6
1850			..					..			7	0	"	0	0
1851	17	6	to	28	0	9	0	to	12	0	6	6	"	8	0
1852	18	6	"	22	0	9	6	"	12	0	4	6	"	7	9
1853	23	0	"	27	0	14	6	"	16	6	8	0	"	11	6
1854	20	0	"	26	0	11	0	"	16	6	8	0	"	10	6
1855	23	6	"	26	6	14	0	"	16	0	10	0	"	11	0
1856	17	0	"	24	0	10	0	"	20	0	7	6	"	10	0
1857	20	0	"	29	0	10	6	"	15	0	9	3	"	11	0
1858	20	0	"	27	6	9	9	"	18	9	8	3	"	10	6
1859	20	0	"	25	0	10	0	"	14	0	8	9	"	11	0
1860	21	0	"	27	3	11	0	"	16	0	10	0	"	18	6
1861	21	0	"	29	0	12	0	"	22	0	6	3	"	14	0
1862	16	9	"	27	0	12	0	"	18	8	6	0	"	12	0
1863	20	0	"	30	6	13	0	"	16	0	8	0	"	11	6
1864	25	0	"	30	0	15	0	"	19	0	10	0	"	13	6
1865	15	6	"	32	6	15	0	"	25	0	10	0	"	17	0
1866	31	6	"	40	0	20	0	"	36	0	18	6	"	22	6
1867	20	0	"	30	6	14	0	"	22	0	7	6	"	13	6
1868	20	0	"	26	0	10	6	"	13	6	7	0	"	13	0
1869	22	0	"	28	0	11	0	"	14	0	6	9	"	9	0
1870	27	0	"	32	6	13	0	"	22	0	8	0	"	14	6
1871	23	0	"	37	0	13	0	"	23	0	11	0	"	16	3
1872	31	6	"	45	0	18	0	"	32	0	12	6	"	18	0
1873	28	0	"	39	0	16	6	"	27	0	7	0	"	16	0
1874	25	0	"	35	0	13	0	"	20	0	7	0	"	14	0
1875	26	6	"	37	6	15	0	"	21	3	9	6	"	17	6
1876	30	0	"	40	0	19	0	"	24	0	13	0	"	20	6
1877	35	0	"	38	9	18	0	"	25	0	13	6	"	23	0
1878	30	0	"	36	0	17	0	"	23	0	12	0	"	22	0
1879	25	0	"	35	9	16	0	"	24	0	10	6	"	20	0
1880	25	0	"	38	0	16	6	"	22	6	10	0	"	17	0
1881	30	0	"	39	0	15	0	"	23	0	10	0	"	15	0
1882	33	0	"	46	0	20	0	"	28	0	12	6	"	18	6
1883	36	0	"	50	6	24	6	"	33	0	14	0	"	21	6
1884	29	0	"	43	6	19	6	"	28	0	12	0	"	19	6
1885	24	0	"	34	0	13	0	"	22	6	10	0	"	15	0
1886	25	0	"	34	0	12	0	"	22	0	10	6	"	16	0
1887	22	0	"	30	0	11	0	"	19	0	8	0	"	13	0
1888	22	0	"	32	0	13	0	"	24	0	10	0	"	15	0
1889	26	0	"	40	0	18	0	"	29	0	13	0	"	22	0

TABLE NO. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.	Ewes.	Lambs.
	s. *d.* *s.* *d.*	*s.* *d.* *s.* *d.*	*s.* *d.* *s.* *d.*
1890	24 0 to 37 0	14 0 to 27 0	10 6 to 19 0
1891	21 0 " 37 0	10 0 " 24 0	7 6 " 15 0
1892	16 0 " 28 6	6 0 " 17 0	3 0 " 10 0
1893	21 0 " 37 0	12 0 " 24 0	7 0 " 14 0
1894	20 0 " 37 0	14 6 " 26 6	8 6 " 16 6
1895	23 0 " 41 0	16 0 " 28 6	9 0 " 17 0
1896	19 0 " 35 4	13 0 " 24 0	6 0 " 13 6
1897	21 0 " 36 6	15 0 " 25 6	7 0 " 14 6
1898	22 0 " 37 0	16 0 " 26 6	8 0 " 15 0
1899	20 0 " 33 6	13 0 " 24 0	5 6 " 13 0
1900	23 0 " 36 0	16 0 " 26 6	8 0 " 15 6
1901	20 0 " 35 0	14 0 " 25 6	6 6 " 14 6
1902	18 6 " 34 0	12 0 " 24 0	6 0 " 14 0
1903	21 0 " 36 0	15 0 " 28 0	7 0 " 16 6
1904	23 0 " 38 6	18 0 " 30 0	8 6 " 17 6
1905	21 6 " 37 0	19 0 " 31 0	9 0 " 18 6
1906	23 0 " 38 0	20 0 " 33 0	10 0 " 19 6
1907	21 0 " 33 6	17 0 " 28 0	8 6 " 17 6
1908	19 6 " 30 0	15 0 " 24 6	8 0 " 16 0
1909	17 0 " 28 0	11 6 " 22 0	6 3 " 13 0
1910	21 0 " 32 6	16 0 " 27 6	8 0 " 17 0
1911	19 0 " 29 6	14 0 " 24 0	7 0 " 15 0
1912	21 6 " 32 6	17 0 " 27 6	9 6 " 17 6
1913	24 6 " 36 0	21 0 " 31 0	12 6 " 21 6
1914	27 0 " 38 6	25 0 " 34 6	15 6 " 24 0
1915	31 0 " 42 6	29 0 " 39 6	17 0 " 25 6
1916	33 0 " 46 6	31 0 " 42 0	19 0 " 27 6
1917	36 0 " 51 0	33 0 " 47 0	21 0 " 30 0
1918	41 0 " 56 0	36 0 " 50 0	27 0 " 33 0
1919	44 0 " 62 0	39 0 " 54 0	29 0 " 36 0
1920	46 0 " 86 0	44 0 " 62 0	31 0 " 43 0
1921	32 9 " 60 9	35 3 " 62 6	20 3 " 47 0
1922	40 3 " 63 0	40 6 " 74 0	18 0 " 44 0
1923	46 0 " 65 6	43 0 " 78 0	21 0 " 45 6
1924	46 0 " 68 6	45 6 " 85 0	25 0 " 55 6
1925	36 0 " 60 0	40 0 " 78 0	17 6 " 44 0
1926	30 0 " 54 0	31 0 " 70 0	Wether lambs— 21 9 " 49 0 Ewe lambs— 19 0 " 50 0
1927	26 6 " 48 0	26 0 " 64 0	Wether lambs— 17 9 " 40 0 Ewe lambs— 17 6 " 37 9
1928	29 0 " 45 9	24 0 " 57 0	Wether lambs— 16 6 " 38 6 Ewe lambs— 17 0 " 38 9
1929	29 9 " 46 0	29 0 " 64 0	Wether lambs— 20 9 " 43 0 Ewe lambs— 18 0 " 37 6
1930	31 6 " 45 0	28 6 " 60 0	Wether lambs— 20 0 " 45 9 Ewe lambs— 20 0 " 37 6
1931	19 6 " 29 9	15 0 " 33 0	Wether lambs— 14 3 " 36 9 Ewe lambs— 16 9 " 40 6
1932	12 0 " 19 6	15 0 " 29 0	Wether lambs— 7 3 " 13 6 Ewe lambs— 7 0 " 14 6

TABLE NO. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d
1818	40 0 to 42 2	..	20 0 to 22 6	..
1819	21 0 〃 22 0	..	10 0 〃 10 3	..
1820	20 0 〃 22 0	..	9 0 〃 10 0	..
1821	18 0 〃 20 0	..	9 0 〃 10 0	..
1822	12 6 〃 14 6	..	5 0 〃 6 6	..
1823	9 0 〃 10 6	..	5 0 〃 5 9	..
1824	13 6 〃 15 0	..	6 0 〃 6 3	..
1825	10 6 〃 22 0	..	10 0 〃 10 6	..
1826	11 0 〃 14 0	..	5 0 〃 5 6	..
1827	11 0 〃 14 0	..	5 6 〃 6 9	..
1828	8 0 〃 11 0	..	5 6 〃 6 0	..
1829	8 6 〃 11 0	..	4 8 〃 0 0	..
1830	9 6 〃 11 0	..	4 6 〃 5 0	..
1831	17 0 〃 20 0	..	7 6 〃 8 6	..
1832	14 0 〃 16 0	..	7 0 〃 7 6	..
1833	18 0 〃 20 7	..	10 0 〃 11 0	..
1834	21 0 〃 24 6	..	5 6 〃 7 0	..
1835	19 0 〃 20 6	..	9 6 〃 10 8	..
1836	21 0 〃 25 0	..	10 0 〃 14 0	..
1837	12 0 〃 14 0	..	7 0 〃 7 8	..
1838	19 0 〃 22 6	..	6 0 〃 10 0	..
1839	18 0 〃 20 0	..	8 0 〃 12 0	..
1840	15 0 〃 0 0	..	7 0 〃 0 0	..
1841	15 0 〃 16 9	..	6 0 〃 7 5	..
1842	12 6 〃 14 0	..	not quoted.	..
1843	9 0 〃 11 6	..	5 0 to 6 0	..
1844	15 0 〃 18 0	..	not quoted.	.
1845	14 6 〃 17 6	..	7 6 to 8 6	..
1846	12 0 〃 14 6	..	8 0 〃 8 6	..
1847	12 6 〃 14 0	..	not quoted.	..
1848	9 6 〃 11 0	..	4 9 to 0 0	..
1849	12 0 〃 16 6	..	6 0 〃 6 3	..
1850	15 0 〃 17 6	..	8 0 〃 8 6	..
1851	12 0 〃 16 0	..	8 0 〃 9 3	..
1852	13 0 〃 15 0	..	8 0 〃 9 0	..
1853	19 0 〃 22 0	..	11 0 〃 12 6	..
1854	12 0 〃 15 0	..	7 6 〃 8 6	..
1855	14 6 〃 19 0	..	8 6 〃 9 0	..
1856	19 0 〃 21 6	..	11 0 〃 0 0	..
1857	19 0 〃 24 0	..	13 0 〃 14 3	..
1858	15 0 〃 17 0	..	8 9 〃 10 0	..
1859	18 6 〃 24 0	..	10 9 〃 11 6	..
1860	22 0 〃 32 0	37 0 to 38 0	10 0 〃 11 3	..
1861	19 6 〃 27 0	from 30s. upwards	not quoted.	..
1862	18 6 〃 26 0	30 0 to 37 0	11 6 to 16 0	..
1863	25 6 〃 31 0	38 0 〃 42 0	15 3 〃 17 6	..
1864	31 0 〃 39 0	47 0 〃 54 0	17 6 〃 20 0	..
1865	23 0 〃 30 0	44 0 〃 45 0	15 0 〃 17 0	..
1866	24 0 〃 30 0	30 0 〃 38 0	14 0 〃 16 0	..
1867	16 0 〃 21 6	not quoted.	not quoted.	..
1868	19 0 〃 26 0	28 0 to 32 0	8 6 to 9 0	..
1869	18 0 〃 26 6	not quoted.	8 6 〃 10 0	..
1870	15 0 〃 23 6	25 0 to 26 0	9 6 〃 0 0	..
1871	20 0 〃 26 6	30 0 〃 34 6	12 0 〃 15 0	..
1872	26 0 〃 37 6	40 0 〃 48 0	18 0 〃 21 0	..
1873	17 0 〃 18 0	34 0 〃 40 0	9 0 〃 12 0	..
1874	18 6 〃 26 6	30 0 〃 34 0	9 6 〃 13 0	..
1875	25 0 〃 32 0	34 6 〃 36 0	12 6 〃 16 0	..
1876	20 0 〃 24 0	30 0 〃 34 6	9 6 〃 12 0	..
1877	20 9 〃 26 0	28 0 〃 30 0	10 0 〃 12 0	..
1878	18 9 〃 25 0	27 0 〃 32 0	8 6 〃 11 6	..
1879	15 0 〃 17 0	prices very low.	7 0 〃 0 0	..
1880	20 0 〃 24 0	30 0 to 32 0	10 6 〃 11 6	14 0 to 15 0
1881	17 0 〃 21 0	27 0 〃 30 0	5 0 〃 9 6	12 0 〃 13 0
1882	14 0 〃 18 0	27 6 〃 28 0	7 6 〃 9 0	13 0 〃 14 0
1883	13 0 〃 18 0	26 0 〃 28 0	6 6 〃 8 6	11 6 〃 12 6
1884	13 0 〃 18 0	26 0 〃 28 0	6 6 〃 8 6	11 6 〃 12 6
1885	12 0 〃 17 0	22 6 〃 26 0	6 0 〃 8 0	11 6 〃 12 0
1886	13 0 〃 18 0	23 0 〃 27 6	6 6 〃 8 6	11 6 〃 12 0
1887	14 0 〃 22 0	23 0 〃 28 0	7 0 〃 9 0	11 6 〃 13 0
1888	13 0 〃 20 0	23 0 〃 28 0	7 0 〃 9 0	11 0 〃 12 6

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.					White Cheviot.					Laid Highland.					White Highland.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1889	13	0	to	18	0	24	0	to	28	0	7	0	to	9	0	11	0	to	12	6
1890	13	0	"	18	0	24	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1891	12	6	"	18	0	22	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1892	12	0	"	18	0	20	0	"	28	0	7	0	"	8	6	10	6	"	12	0
1893	12	0	"	17	0	20	0	"	27	0	7	0	"	8	0	10	0	"	12	0
1894	12	0	"	16	0	20	0	"	26	0	7	0	"	8	0	10	0	"	12	0
1895	12	0	"	16	0	20	0	"	25	0	7	0	"	8	0	10	0	"	11	6
1896	11	0	"	15	0	19	0	"	24	0	7	0	"	8	0	10	0	"	11	6
1897	11	0	"	14	0	18	0	"	23	0	7	0	"	8	0	10	6	"	12	0
1898	10	0	"	13	0	16	0	"	20	0	7	0	"	8	0	10	0	"	11	6
1899	10	0	"	13	0	13	0	"	18	6	7	0	"	8	0	8	6	"	9	6
1900	9	9	"	12	0	13	0	"	18	6	6	9	"	7	9	8	0	"	9	6
1901	9	0	"	10	0	11	0	"	16	6	5	9	"	6	6	8	0	"	9	0
1902	9	0	"	10	0	11	6	"	17	0	6	0	"	6	6	8	6	"	9	6
1903	10	0	"	12	0	15	0	"	18	0	7	0	"	8	0	11	6	"	12	6
1904	15	0	"	17	0	20	0	"	21	0	9	0	"	10	0	14	0	"	15	0
1905	17	0	"	20	0	24	0	"	26	0	10	0	"	11	0	15	0	"	16	0
1906	18	0	"	21	0	27	0	"	28	6	11	6	"	13	0	16	6	"	17	6
1907			*			22	0	"	24	0	11	0	"	12	6	16	0	"	17	0
1908			*			16	0	"	18	0			†			8	0	"	8	6
1909			*			24	0	"	26	0			†			12	6	"	14	0
1910			*			25	0	"	30	0			†			13	0	"	14	6
1911			*			25	0	"	30	0			†			13	0	"	14	6
1912			*			24	0	"	29	0			†			14	0	"	15	0
1913			*			25	0	"	30	0			†			17	0	"	18	0
1914			*			24	0	"	29	0			†			15	0	"	15	6
1915‡			*			42	0	"	46	0			†			21	0	"	22	0

* No Cheviots smeared now. † No Highlands smeared now. ‡ These are July prices.

[*See over*

PRICE OF WOOL PER STONE OF 24 LB.—*Continued.*

	CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (BLACKFACE EWE AND LEICESTER RAM).			
	HOGG.		EWE AND WETHER.		HOGG.		EWE AND WETHER.		HOGG.	EWE AND WETHER.	HOGG.		EWE AND WETHER.	
	Washed	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.			Washed.	Un-washed.	Washed.	Un-washed.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
[1] 1916 . . .	36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
Caithness & Sutherland	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6						
[1] 1917 . . .	40 6	33 0	37 0	31 0	38 6	31 6	37 0	31 0	25 6	25 6	31 6	28 6	31 6	28 6
Caithness & Sutherland	44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6						
[1] 1918 . . .	43 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	27 0	27 0	33 6	30 6	33 6	30 6
Caithness & Sutherland	47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6						
1919 . . .	84 0	70 0	82 0	66 0	82 0	62 0	70 0	58 0	34 0	34 0	46 0	39 0	44 0	38 0
Caithness & Sutherland	88 0	74 0	84 0	68 0	84 0	63 0	72 0	60 0						
1920 . . .	86 0	70 0	83 0	66 0	74 0	54 0	65 0	50 0	24 0	24 0	35 0	29 0	34 0	27 0
Caithness & Sutherland	90 0	74 0	87 0	68 0	76 0	56 0	68 0	52 0						
1921 . . .	22 0	17 0	19 0	15 0	18 6	14 6	16 0	13 0	9 6	9 6	12 0	10 0	12 0	10 0
Caithness & Sutherland	23 0	18 0	20 0	16 0	19 6	15 6	17 0	14 0						
1922 . . .	30 0	25 0	26 0	22 0	26 0	20 0	22 0	18 0	16 0	16 0	16 6	15 0	16 6	15 0
Caithness & Sutherland	31 6	26 0	27 0	23 0	27 0	21 0	23 0	19 0						
1923 . . .	41 0	34 0	36 0	30 0	33 0	27 0	30 0	25 0	17 6	17 6	20 0	18 0	20 0	18 0
Caithness & Sutherland	43 0	35 0	37 0	31 0	34 0	28 0	31 0	26 0						
1924 . . .	58 0	49 0	53 0	45 0	49 0	40 0	45 0	39 0	25 6	25 6	34 6	30 6	33 0	30 0
Caithness & Sutherland	60 0	50 0	54 0	46 0	50 0	41 0	46 0	40 0						
1925 . . .	39 0	34 0	36 0	30 0	33 6	28 6	32 0	27 0	25 6	25 6	26 0	23 6	25 6	23 0
Caithness & Sutherland	40 0	35 0	37 0	31 0	34 0	29 0	33 0	28 0						
1926 . . .	35 0	29 0	32 0	28 0	32 0	26 6	28 0	24 6	19 0	19 0	22 6	20 0	22 0	19 6
Caithness & Sutherland	36 0	30 0	33 0	29 0	33 0	27 6	29 0	25 6						
1927 . . .	38 0	31 0	35 0	31 0	34 6	29 6	32 0	27 6	24 0	24 0	27 0	25 6	27 0	25 0
Caithness & Sutherland	39 0	32 0	36 0	32 0	35 0	30 0	33 0	28 6						
1928 . . .	51 0	43 0	48 0	41 0	47 0	40 0	43 0	37 0	24 6	24 6	33 0	31 0	32 0	30 0
Caithness & Sutherland	52 0	44 0	49 0	42 0	48 0	41 0	44 0	38 0						
1929 . . .	37 0	32 0	34 0	29 0	34 0	29 0	32 0	27 0	24 0	24 0	27 0	25 0	26 0	24 0
1930 . . .	23 0	19 0	22 0	18 0	21 0	17 6	20 0	16 6	12 0	12 0	17 6	15 6	16 6	15 6
1931 . . .	16 6	13 6	15 6	13 0	15 0	13 0	13 6	11 6	11 0	11 0	12 0	10 6	11 6	10 0
1932 . . .	14 6	11 6	14 0	11 6	12 6	11 6	11 6	9 6	8 0	8 0	9 0	8 6	8 0	7 6

---

[1] The prices given were prices fixed by Government, and not free market prices.

GENERAL SHOW AT INVERNESS, 1932.

THE One hundred and first Show of the Society was held at Inverness on Tuesday, 21st June, and three following days. It was the twelfth Show to be held at Inverness.

On this occasion a new site was provided by the town of Inverness at the Bughts Park, previous Shows having been held at the Victoria Park. The site was ample in extent, practically level and beautifully situated between Tomnahurich and the River Ness. Besides the site, the Town Council generously contributed a sum of 50 guineas to the Show Funds, gave a supply of water free of charge and did everything in their power to further the success of the Show.

The meeting was fortunate in being favoured with excellent weather, both prior to and during the days of the Show. The total number of visitors who paid for admission during the four days was 38,619. This was about 800 less than on the occasion of the previous Show at Inverness in 1923. In view of the depressed condition of Agriculture and trade generally, the attendance was regarded as satisfactory.

There was a good display of Live-stock, a feature of the Show being the large entry in the Sheep section. Implements and Machinery were well up to the average, and provided, as usual, an interesting and instructive display.

While the Accounts showed a loss of £3254, it was generally conceded that, as a Show, the meeting at Inverness was a decided success.

STATISTICS.

The following tables give the number of entries in the various sections:—

CATTLE.

Class.	SHORTHORN.	No. of Entries.	
1.	Aged bulls	7	
2.	Two-year-old bulls	5	
3.	Two-year-old bulls	2	
4.	One-year-old bulls	15	
5.	One-year-old bulls	10	
6.	Cows born before 1st December 1928, in milk	5	
7.	Three-year-old cows	1	
8.	Two-year-old cows or heifers	6	
9.	One-year-old heifers	13	
10.	One-year-old heifers	5	
		—	69

ABERDEEN-ANGUS.

11. Aged bulls	10	
12. Two-year-old bulls	7	
13. One-year-old bulls	3	
14. One-year-old bulls	8	
15. Cows born before 1st December 1928, in milk	3	
16. Three-year-old cows, in milk	6	
17. Two-year-old cows or heifers	9	
18. One-year-old heifers	15	
19. One-year-old heifers	7	
	—	68

GALLOWAY.

20. Aged bulls	4	
21. Two-year-old bulls	4	
22. One-year-old bulls	5	
23. Cows born before 1st December 1929, in milk	4	
24. Two-year-old cows or heifers	12	
25. One-year-old heifers	9	
	—	38

BELTED GALLOWAY.

26. Bulls born before 1st December 1930	4	
Extra Stock	1	
27. Bulls born on or after 1st December 1930	3	
28. Cows or heifers, born before 1st December 1929, in milk or in calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show	5	
29. Heifers born on or after 1st December 1929	5	
	—	18

HIGHLAND.

30. Aged bulls	2	
31. Two-year-old bulls	2	
32. One-year-old bulls	9	
33. Cows of any age, with calf at foot	9	
34. Three-year-old heifers	6	
35. Two-year-old heifers	6	
36. One-year-old heifers	7	
	—	41

AYRSHIRE.

37. Cows in milk, born before 1929	6	
38. Cows in milk, born on or after 1st January 1929	2	
39. Cows of any age, in calf, and due to calve before 1st December of the year of the Show	7	
40. Heifers born on or after 1st June 1929, in calf, and due to calve before 1st December of the year of the Show	4	
41. Heifers born in 1930	8	
42. Heifers born in 1931	6	
43. Bulls born before 1930	4	
44. Bulls born in 1930	4	
45. Bulls born in 1931	3	
	—	44

British Friesian.

46. Cows in milk, born in or before 1928	3	
47. Cows in calf and not in milk, born in or before 1928	8	
Extra Stock	1	
48. Cows in milk, born in 1929 or 1930	3	
49. Heifers born in 1930	8	
50. Heifers born in 1931, before 1st July	10	
51. Heifers born in 1931, on or after 1st July	6	
52. Bulls born in or before 1929	8	
Extra Stock	1	
53. Bulls born in 1930	2	
54. Bulls born in 1931	6	
	—	56

Red Poll.

55. Cows in milk, or in calf, born before 1930	5	
56. Heifers born in 1930	3	
57. Heifers born in 1931	4	
58. Bulls born in or before 1930	3	
59. Bulls born in 1931	...	
	—	15

Fat Cattle.

60. Bullock, any pure breed or cross, born on or after 1st December 1929 and before 1st December 1930	4	
61. Bullock, any pure breed or cross, born on or after 1st December 1930	4	
62. Pair of cross-bred bullocks, or pair of cross-bred heifers, any age	2	
	—	10

Dairy Cow.

63. Dairy cow, in milk, any pure breed or cross, and of any ag (cancelled—Regulation 12)	...	
64. Dairy cow, in milk, drawn from Classes 28, 37, 38, 46, 48, 55 and 63 (4 entries)	...	
	—	...
		359

HORSES.

Clydesdale Stallions and Colts.

65. Aged stallions	3	
66. Three-year-old entire colts	8	
67. Two-year-old entire colts	16	
68. One-year-old entire colts	14	
	—	41

Clydesdale Geldings.

69. Aged geldings	4	
70. Three-year-old geldings	8	
71. Two-year-old geldings	5	
72. One-year-old geldings	3	
	—	20

CLYDESDALE MARES AND FILLIES.

73. Mares of any age, with foal at foot	8	
74. Yeld mares, born before 1929	9	
75. Three-year-old yeld mares or fillies	7	
76. Two-year-old fillies	11	
77. One-year-old fillies	18	
	—	53

CLYDESDALE FOAL.

78. Foal, colt or filly, born on or after 1st January 1932		7

HUNTERS.

79. Hunter brood mares, with foal at foot	1	
80. Yeld mares, fillies or geldings, born in 1929, in hand	6	
81. Yeld mares, fillies or geldings, born in 1930, in hand	7	
82. Fillies, colts or geldings, born in 1931, in hand	6	
	—	20

HIGHLAND PONIES AND WESTERN ISLAND PONIES.

83. Stallions, born before 1930, not exceeding 14·2 hands	1	
84. Stallions, born before 1930, not exceeding 14 hands	1	
85. Mares, born before 1930, not exceeding 14·2 hands, yeld or with foal at foot	5	
86. Mares, born before 1930, not exceeding 14 hands, yeld or with foal at foot	4	
Extra Stock	2	
87. Entire colts, born on or after 1st January 1930, not exceeding 14·2 hands	1	
88. Fillies, born on or after 1st January 1930, not exceeding 14·2 hands	5	
	—	19

SHETLAND PONIES.

89. Stallions, not exceeding 10½ hands, born before 1929	3	
90. Entire colts, not exceeding 10½ hands, born in 1929 or 1930	3	
91. Mares, not exceeding 10½ hands, with foal at foot	6	
92. Yeld mares, not exceeding 10½ hands	5	
93. Fillies, not exceeding 10½ hands, born in 1929 or 1930	4	
	—	21

SADDLE CLASSES.

94. Mares or geldings, any age, over 13·2 hands and not exceeding 15·2 hands, in saddle	7	
95. Mares or geldings, any age, not exceeding 13·2 hands, in saddle	4	
	—	11
		192

JUMPING.

1. Horses or ponies, any height	19	
2. Horses or ponies, any height—handicap	18	
3. Horses or ponies, any height	18	
4. Horses or ponies, any height—handicap	17	
	—	72

SHEEP.

Blackface.

96.	Tups, three shear and over	7	
97.	Tups, two shear	6	
98.	Shearling tups	16	
99.	Tup lambs	13	
100.	Ewes above one shear (unclipped), with lamb at foot	5	
101.	Shearling ewes or gimmers	4	
		—	51

Cheviot.

102.	Tups above one shear	15	
103.	Shearling tups	22	
104.	Tup lambs	12	
105.	Ewes above one shear, with lamb at foot	11	
106.	Shearling ewes or gimmers	14	
107.	Ewe lambs	10	
		—	84

North Country Cheviot.

108.	Tups above one shear	13	
109.	Shearling tups	21	
110.	Ewes above one shear, with lamb at foot	20	
111.	Shearling ewes or gimmers	18	
		—	72

Border Leicester.

112.	Tups above one shear	7	
113.	Shearling tups	19	
114.	Tup lambs	16	
115.	Ewes above one shear	7	
116.	Shearling ewes or gimmers	11	
117.	Ewe lambs	13	
		—	73

Half-bred.

118.	Shearling tups	5	
119.	Ewes above one shear	3	
120.	Shearling ewes or gimmers	4	
121.	Ewe lambs	3	
		—	15

Oxford Down.

122.	Shearling tups	6	
123.	Shearling ewes or gimmers	9	
124.	Tup lambs	10	
125.	Ewe lambs	9	
		—	34

SUFFOLK.

126.	Tups, one shear and over	7	
127.	Shearling ewes or gimmers	9	
128.	Tup lambs	12	
129.	Ewe lambs	12	
		—	40

SHROPSHIRE.

130.	Tups, any age	5	
131.	Ewes or gimmers	3	
		—	8

DORSET HORN.

132.	Tups, any age	3	
133.	Ewes or gimmers	9	
		—	12

FAT SHEEP.

134.	Three fat lambs, any breed or cross, dropped in the year of the Show		3
			392

GOATS.

135.	Female goats, Toggenburg, British Toggenburg, or British Alpine, in milk	4	
136.	Female goats, Saanen, or British Saanen, in milk	3	
137.	Female goats, any other variety, in milk	5	
138.	Goatlings, Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years	3	
139.	Goatlings, any other variety, over one but not exceeding two years	5	
140.	Female kids, any variety, not exceeding one year	4	
141.	Male kids, any variety, not exceeding one year	4	
		—	28

MILKING COMPETITIONS.

142.	For quality, open to Classes 135 to 137 (10 entries)	...	
143.	For quantity, open to Classes 135 to 137 (10 entries)	...	
		—	...
			28

PIGS.

LARGE WHITE.

144.	Boars born before 1931	4	
145.	Boars born in 1931	9	
146.	Boars born in 1932	5	
147.	Sows born before 1931	7	
148.	Sows born in 1931	14	
149.	Sows born in 1932	9	
		—	48

MIDDLE WHITE.

150. 151. 152. 153.	Cancelled (Regulation 12).	..

LARGE BLACK.

154. 155. 156. 157. 158.	Cancelled (Regulation 12).	...
		48

POULTRY.

1–130.	452

EGGS.

1-4.	55

FUR-PRODUCING RABBITS.

1–19.	58

HONEY, &c.

OPEN CLASSES.

1.	Collection of appliances suitable for a beginner's outfit for bee-keeping	1	
2.	Best and most complete frame hive for general use, with any improvements. Unpainted	6	
3.	Best and most complete hive. Unpainted. Price not to exceed 35s.	2	
4.	Six sections of comb honey, excluding heather honey	7	
5.	Six sections of heather honey	6	
6.	Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	6	
7.	Six jars of run or extracted medium or dark-coloured honey, excluding heather honey, approximate weight 6 lb.	6	
8.	Six jars of pressed heather honey in liquid form, approximate weight 6 lb.	7	
9.	Six jars of granulated honey, approximate weight 6 lb.	7	
10.	Two shallow frames of comb honey for extracting purposes	4	
11.	Products made with the aid of honey	1	
12.	Best display of honey in any form suitable for a shop window in space 4 feet by 4 feet; weight of honey not to exceed 40 lb.	3	
13.	Best exhibit of not less than 1 lb. of wax in any form	6	
14.	Best exhibit of not less than 1 lb. of wax made into shapes for retail trade and over-counter trade	5	
15.	Observatory hive with queen and bees—two or more frames	2	
16.	Observatory hive with queen and bees—one frame, no super	4	
			73

Confined to Scottish Exhibitors.

17. One standard frame of comb honey for extracting purposes	2	
18. Six sections of comb honey, excluding heather honey	8	
19. Six sections of heather honey	6	
20. Six jars of run or extracted medium or dark-coloured honey, excluding heather honey, approximate weight 6 lb.	6	
21. Six jars of run or extracted light-coloured honey, approximate weight 6 lb.	8	
	—	30
		103

DAIRY PRODUCE.

1. Powdered butter, not less than 3 lb.	7	
2. Fresh butter, three 1-lb. rolls	10	
3. Cheddar cheese, 56 lb. and upwards	8	
4. Cheese, 14 lb. and under	7	
	—	32

WOOL.

Pure Breed Classes.

1. Blackface ewe	4	
2. Blackface hogg	5	
3. Cheviot ewe	6	
4. Cheviot hogg	6	
5. Border Leicester ewe	2	
6. Border Leicester hogg	2	
7. Half-bred ewe	1	
8. Half-bred hogg	1	
9. Oxford Down ewe	3	
10. Oxford Down hogg	3	
11. Suffolk ewe	2	
12 Suffolk hogg	2	
13. Dorset Horn ewe	3	
14. Dorset Horn lamb	3	
15. Shetland ewe	10	
16. Shetland hogg	8	
	—	61

RURAL INDUSTRIES.

1-25	401

HORSE-SHOEING.

Class 1 (open) 0; class 2 (juniors), 13	53

SHOE-MAKING.

1	35

LIVE STOCK JUDGING.

Open to persons not exceeding 23 years of age.	93

BUTTERMAKING.

Class 1 (open), 31 ; class 2 (novice), 26	57

SUMMARY.

1. Cattle	359
2. Horses	192
3. Jumping	72
4. Sheep	392
5. Goats	28
6. Pigs	48
7. Poultry	452
8. Eggs	55
9. Fur-Producing Rabbits	58
10. Honey, &c.	103
11. Dairy Produce	32
12. Wool	61
13. Rural Industries	401
14. Horse-Shoeing	53
15. Shoe-Making	35
16. Live Stock Judging	93
17. Buttermaking	57
	2491

The following table gives a comparative view of the entry of cattle, horses, sheep, goats, pigs, poultry, eggs, rabbits, honey, dairy produce, wool, rural industries, &c., and implements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held at Inverness :—

Year.	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Eggs.	Rabbits.	Honey, &c.	Dairy Produce.	Wool.	Rural Industries.	Horse-Shoeing.	Live Stock Judging.	Butter-making.	Imple-ments.	Premiums.	Drawings at Show.
1831	198	77	86	..	..	..	..	..	..	..	..	..	..	..	..	4	£318	£71
1839	302	93	126	..	.	..	..	..	..	..	..	..	..	..	..	24	744	211
1846	428	112	125	..	..	87	..	..	..	23	..	..	..	..	..	59	1050	254
1856	248	131	204	..	..	52	..	..	..	..	..	..	..	..	..	231	1000	315
1865	361	132	317	..	..	98	..	..	..	..	..	..	..	..	..	707	1300	920
1874	391	175	192	..	..	328	..	..	..	..	..	..	..	..	..	1161	2030	1120
1883	354	172	175	..	..	308	..	..	..	..	..	..	..	..	..	1280	1978	1295
1892	255	218	201	..	..	229	..	..	..	29	..	..	..	..	..	1381	2056	1750
1901	360	257	204	..	..	499	..	..	..	42	22	..	..	..	..	1463	2806	2476
1911	308	275	287	..	..	474	..	..	..	41	..	..	..	..	..	1513	2870	2550
1923	452	204	272	24	164	546	..	..	88	47	60	337	36	..	..	1777	5485	6287
1932	359	192	392	28	48	452	55	58	103	32	61	401	88	93	57	1926	6845	6153

A COMPARISON.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest:—

	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Total Live Stock.	Implements.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867 .	286	212	257	..	58	150	..	963	1344	£1600	£3,005	£1307
Edinburgh, 1869	310	212	340	..	22	239	..	1123	1900	1600	4,078	2067
Glasgow, 1875 .	411	405	296	..	48	479	..	1639	2220	2665	6,231	3316
Edinburgh, 1877	339	342	305	..	30	234	..	1250	2292	2714	6,734	3710
Edinburgh, 1884	580	453	493	..	35	253	..	1814	2282	4343	6,548	1855
Edinburgh, 1893	380	349	294	..	31	360	..	1414	2268	2600	4,918	2323
Aberdeen, 1894 .	314	324	184	..	34	365	..	1221	2532	2440	5,121	1678
Perth, 1896 .	292	258	204	..	20	374	..	1148	1945	2205	4,788	2511
Glasgow, 1897 .	317	350	245	..	30	275	..	1217	2227	2897	4,392	2021
Edinburgh, 1899	386	518	477	..	46	551	..	1978	2585	3844	10,285	3911
Stirling, 1900 .	321	288	369	..	28	457	..	1463	2095	2915	4,305	1078
Inverness, 1901 .	360	257	204	..	22	499	..	1340	1460	2806	2,485	99
Aberdeen, 1902 .	330	253	243	..	42	475	..	1343	1988	2796	4,413	1604
Perth, 1904 .	348	315	283	..	35	413	..	1394	1972	3058	4,093	1828
Glasgow, 1905 .	310	462	284	..	60	534	..	1750	1875	3702	4,473	1203
Peebles, 1906 .	253	258	291	..	40	438	..	1280	1658	3072	2,596	416
Edinburgh, 1907	363	464	352	..	58	605	..	1842	2140	3614	7,061	2309
Aberdeen, 1908 .	331	299	237	..	42	509	..	1418	1931	3045	4,596	1881
Stirling, 1909 .	330	355	249	..	54	539	..	1527	1977	3017	4,638	1100
Dumfries, 1910	270	355	295	..	54	481	..	1455	1950	3057	3,411	562
Paisley, 1913 .	408	472	334	..	48	536	..	1798	1968	5109	6,468	2527
Edinburgh, 1919	215	301	221	60	43	398	..	1238	1605	4517	17,377	3275
Aberdeen, 1920 .	340	250	279	19	112	597	..	1597	2065	4608	14,120	1679
Stirling, 1921 .	367	279	299	59	188	582	..	1774	2201	5055	12,822	2350
Dumfries, 1922 .	422	272	339	41	229	588	..	1891	2156	5488	11,428	1090
Perth, 1924 .	406	283	366	21	202	760	..	2038	2382	5712	10,758	2311
Glasgow, 1925 .	461	340	349	31	178	577	178	2114	2570	6136	12,865	4226
Kelso, 1926 .	430	284	597	31	159	546	108	2155	2366	6004	9,218	324
Edinburgh, 1927	462	357	493	63	201	724	184	2484	2874	6049	12,315	2090
Aberdeen, 1928 .	421	277	349	25	80	578	120	1850	2377	6131	11,031	1882
Edinburgh, 1931	635	389	684	47	117	644	125	2641	2991	9608	12,478	704

CATTLE.

In respect of numbers Cattle did not compare favourably with the entry received at the previous Show at Inverness in 1923, but, in view of the depressed state of agriculture, a total entry of 359 animals may be regarded as being quite satisfactory.

Owing to the unfortunate outbreak of foot-and-mouth disease, which prevented the exhibition of cattle, sheep, goats and pigs at the Hundredth Show held at Edinburgh in the previous year, the Prince of Wales Champion Gold and Silver Medals offered in these sections at that Show were competed for at Inverness.

Although rather short in numbers, Shorthorns presented a very favourable display. Mr Albert James Marshall, Bridgebank, Stranraer, who won the Championship at Alloa in 1929 and at Dumfries in 1930, continued his run of successes by again obtaining the Championship at Inverness. The winning animal on this occasion was "Balcairn Colonel," 227,865 (Fig. 13). A massive four-year-old red bull, shown in excellent condition, he was bred by Mr Falconer L. Wallace of Candacraig, Strathdon, his sire being "Balcairn Welcome Duke," 213,130, and dam "Balcairn Coltsfoot," 31,319. In addition to the Prince of Wales Champion Gold Medal "Balcairn Colonel" was also awarded the Paisley Perpetual Gold Challenge Cup, the Duthie Challenge Cup, the Tweeddale Gold Medal for best bull and the Shorthorn Society's Special Prize of £20 and Silver Medal for best male. The Reserve Champion animal was also found in the male classes, this being "Doune Mercury," 243,649, a two-year-old typical red and white bull exhibited by Messrs J. Baird & Co. (Falkirk) Ltd., Bantaskin, Falkirk, and bred by the late Earl of Moray. The Shorthorn Society's Special Prize of £20 and Silver Medal for best female was also secured by Mr Marshall with his red roan five-year-old home-bred cow "Augusta Melissa," 99,582.

Aberdeen-Angus cattle numbered 68, one less than Shorthorns. There were few absentees and the quality of the exhibits was very high. The Prince of Wales Champion Gold Medal, the Ballindalloch Challenge Cup for best male animal, and the Aberdeen-Angus Cattle Society's Champion Gold Medal were won by "Jarvie Eric," 67,784 (Fig. 14), an outstanding four-year-old bull. Owned by Mr Andrew T. Reid, Auchterarder House, Auchterarder, and bred by Mr J. E. Kerr of Harviestoun, Dollar, he was got by "Jipsey Eric," 62,088, out of "Janie Erica," 74,422. The Silver Cup given by Senor Eduardo Estanguet, for which "Jarvie Eric" was not eligible on account of age, went to "Euxidor 3rd," 77,307, a yearling bull exhibited and bred by Sir Edmund Findlay, Bart., of Aberlour. Another successful exhibitor was Colonel Norman Kennedy of Doonholm, Ayr, who secured the Reserve Championship, the Ballindalloch Challenge Cup for best cow, and the Silver Challenge Cup given by Mr Falconer L. Wallace for best female, with his excellent home-bred four-year-old cow "Elinka of Doonholm," 87,315. Colonel Kennedy, with "Elinka of Doonholm" and two other home-bred animals, also won the Silver Challenge Cup given by Mr W. Gilchrist Macbeth for best group of Aberdeen-Angus Cattle consisting of one male and two females.

In view of the fact that Inverness is far from the home of the breed, an entry of 38 Galloways was exceptionally good. After keen competition the Prince of Wales Champion Gold Medal and the Dr Gillespie Memorial Challenge Trophy were awarded to "Excelsior of Castle Milk," 15,884 (Fig. 15), a seven-year-old bull of true breed character, exhibited by Sir John William Buchanan-Jardine of Castlemilk, Bart., Lockerbie. Bred by the late Sir Robert W. Buchanan-Jardine, Bart., he was got by "Mormon of Dalwyne," 12,617, his dam being "Elite of Castle Milk," 26,496. The Reserve Champion and winner of the Galloway Cattle Society's Silver Challenge Cup was the beautiful two-year-old heifer "Culmark Queen 2nd," 33,616, shown by Messrs D. & J. Little, Whitehill, Corrie, Lockerbie, and bred by Mr Hugh Fraser, Culmark, Dalry, Galloway.

There was a small entry of Belted Galloways. General Sir Ian Hamilton, G.C.B., secured the Championship and the Knockbrex Challenge Cup with his "Extra Stock" animal "Allington Concrete," 467 B, (Fig. 16), a grand eight-year-old bull bred by Mr G. H. Woodman, Osbourne House, Polegate, Sussex. Sired by "Allington Hector," 17 B, his dam was "Allington Primrose," 125 B. The Reserve for the Championship was "Gartmore Robin," 707 B, owned and bred by Sir August Cayzer, Bart., Gartmore.

It was generally conceded that not for many years had there been such a pleasing and comprehensive display of Highland Cattle. The seven classes attracted an entry of 41 compared with 33 at the previous Inverness Show. The Prince of Wales Champion Gold Medal was won by Mrs Lees-Milne, Killundine, Argyll, with "An Pròiseil Riabhach of Killundine," 3656 (Fig. 17), a brindled yearling bull of excellent quality. Bred by exhibitor, his sire was "Prionnsa Bhuidhe of Kilchamaig," 3581, and dam "Riabhach Mhollach III.," 10,076. This animal was also awarded the Highland Cattle Society's Perpetual Victory Challenge Cup for best male. The corresponding Cup for best female went to "Madam Corrina," 10,507, a two-year-old heifer entered and bred by The Earl of Southesk, who also exhibited the Reserve Champion animal "Merlin IV.," 3640, a home-bred three-year-old red brindled bull.

Ayrshires were not strong numerically, but the animals forward were a credit to the breed. It is perhaps worthy of mention that about 70 per cent of the animals at the Show were from Grade "A." (TT) or Certified Herds. The Supreme Champion and winner of the Cowhill Champion Cup and the Ayrshire Cattle Society's Special Prize of £10 for best female was "Meikle Kilmory Rosary," 91,252 (Fig. 18), a beautiful brown and white nine-year-old cow belonging to Mr James M'Alister, Meikle Kilmory, Rothesay. She was bred by Mrs M'Alister and was sired by "Carston General Haig," 20,783, out of "Meikle Kilmory Rosie 5th," 49,112. Mr Robert M'Alister, Mid Ascog, Rothesay, was the breeder and exhibitor of the Reserve Champion animal "Mid Ascog Pearl Royal 5th," 27,884, a nicely shaped six-year-old black and white cow. "Hobsland Satisfaction," 28,909, a three-year-old white bull, secured for his owner, The Hon. T. G. P. Corbett, Rowallan, Kilmarnock, the Ayrshire Cattle Society's special prize of £10 for best male animal.

British Friesians, with 56 entries, were well represented, and the quality of the exhibits was of high merit. The Prince of Wales Champion Gold Medal went to the Trustees of Sir Alasdair W. MacRobert, Bart., Douneside Home Farm, Tarland, for "Douneside Becula 5th," 145,894 (Fig. 19). This fine quality two-year-old heifer was bred by exhibitors, her sire being "Douneside Masterpiece," 19,835, and dam "Douneside Becula," 70,586. The MacRobert Champion Bell and the British Friesian Cattle Society's Special Prize of £5 for best female were also gained by this heifer. The runner-up for Championship honours and winner of the British Friesian Cattle Society's Special Prize of £5 for best male was "Kintyre Thorn," 36,047, a three-year-old bull, the property of Mr Malcolm M'Ilchere, Cartside Farm, Thorntonhall. With the Champion animal and two other home-bred heifers the Trustees of Sir Alasdair W. MacRobert, Bart., secured the Silver Challenge Cup offered by the British Friesian Cattle Society for best group of three animals.

The entry of Red Polls was disappointing. Mr Charley Tinker, Kilmartin, Inverness, was successful in obtaining the Prince of Wales Champion Gold Medal and the Kinmount Challenge Cup with an animal of his own breeding, "Kilmartin Prim," 45,519 (Fig. 20). This well-built two-year-old heifer was got by "Kilmartin Jupiter," 13,810, out of "Gressenhall Prim," 31,114. The Reserve Champion, a two-year-old bull, "Colton Hector," 15,655, was exhibited by Major W. B. Robertson, M.C., Colton, Dunfermline.

Three classes were provided for Fat Cattle and these brought forward 10 entries. The Prince of Wales Champion Silver Medal went to Mr R. Jardine Paterson, Balgray, Lockerbie, for his two-year-old Galloway bullock "Xmas Gift" (Fig. 21), bred by Mr C. Jeffrey, Wyliehole, Lockerbie. The sire was "Copyright of Tundergarth Mains," 16,360, and dam "Brachycombe of Queenshill," 28,223.

The first winner of the Edinburgh Corporation Perpetual Gold Challenge Cup, offered for best Dairy Cow in milk, was Mr James M'Alister, Meikle Kilmory, Rothesay, who secured the trophy with his Champion Ayrshire cow "Meikle Kilmory Rosary," 91,252 (Fig. 18).

HORSES.

The total entry of 192 Horses was only a few short of that of the previous Show at the same centre. Champion Medals for the different sections were kindly given by the President of the Society, His Grace The Duke of Portland, K.G., P.C., G.C.V.O.

Clydesdale Stallions and Colts numbered 41, out of which the two-year-old and yearling classes claimed 30. The President's Champion Medal and the Cawdor Challenge Cup were won by Messrs T. & M. Templeton, Sandyknowe, Kelso, with their splendid yearling brown colt (Fig. 22). He was bred by Mr Robert Wilson, Kirkcolm, Ballantrae, his sire being the famous "Benefactor," 20,867, and dam "Kirkcolm Margaret," 58,777. Another outstanding yearling colt—"Doune Castle"—bred and exhibited by Messrs A. & T. M'Laren, Drummore, Doune, was runner-up for Championship honours.

The classes for Clydesdale Geldings were not too well represented with entries. "Jim" (Fig. 23), a strong four-year-old brown gelding, the property of Mr James Clark, Windlaw, Carmunnock, was successful in obtaining the Championship. He was sired by "Dollar," 21,208, out of "Alpha," 57,235, his breeder being Mrs Mundell, Dalilongart, Sandbank.

Of the three sections provided for Clydesdale Horses the classes for Mares and Fillies were the best supported with entries. Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, repeated his success of the previous year by again winning the Championship with the same animal, the noted four-year-old bay mare "Onoway" (Fig. 24). Bred by Mr John Barbour, Leaths, Castle Douglas, she was got by "Benefactor," 20,867, her dam being "Bonny of Auchneight," 51,798. The Cawdor Challenge Cup, for which "Onoway" was not eligible, having won it at the Hundredth Show, was awarded to the Reserve animal "Lane Lucky Girl," a typical brown three-year-old filly entered and bred by Mr G. M. Beck, Ravenstonedale, Westmorland.

There were four classes for Hunters and these obtained an entry of 20. Sir John William Buchanan-Jardine of Castlemilk, Bart., scored another success by securing the President's Champion Medal with "Harmony VII.," 7649 (Fig. 25). This stylish home-bred two-year-old bay filly was also awarded the Dumfriesshire Centenary Challenge Cup. She was got by "Harmonius," her dam being "Miss Colling," 7650. Brig.-General R. Cheape, C.M.G., D.S.O., M.C., was the exhibitor of the Reserve Champion "Ross of Mull," a brown three-year-old gelding bred by Sir Lycett Green, York.

Highland and Western Island Ponies were disappointing in regard to numbers, the six classes attracting an entry of only 19. Both the Champion and Reserve Champion animals were exhibited by Major D. G. Moncrieff Wright, M.C., of Kinmonth, Bridge of Earn. The President's Champion Medal and the Fife and Kinross Perpetual Gold Challenge Cup went to the well-known aged mare "Isle of Arran Bonnie Jean," 4408 (Fig. 26), which has been exhibited for several years as "Extra Stock." It is noteworthy that this animal secured the First Prize in the senior class for Mares at Inverness Show in 1923. She was bred at Balmoral by H.M. The King, her sire being "Glencorrodale," 838, and dam "Isle of Arran Bonnie Mary," 2246. The Reserve animal was "Nancy of Kinmonth," 6107, a home-bred grey two-year-old filly.

As in the previous year, Shetland Ponies were disappointing in numbers. Mr William Mungall of Transy, Dunfermline, was the successful exhibitor of both the Champion and Reserve Champion animals. The President's Champion Medal was awarded to "Kitmagur of Penniwells," 1246 (Fig. 27), a fine active six-year-old black stallion. Bred by Mrs Etta Duffus, Penniwells, Elstree, Herts., he was sired by "Dibblitz of Penniwells," 1087, his dam being "Kitcat," 3096. The Reserve Champion and winner of the Shetland Pony Society's Silver Medal was "Helsa of Transy," a home-bred five-year-old black mare. Mr Mungall also secured the Special Prize of £10 offered by "Four Lovers of the Breed" for best group of Shetland Ponies.

The Saddle Classes were moderately filled. It is worthy of mention that the First Prize in each of the two classes was obtained by local exhibitors—Miss Dodgson, Coulmore, Kessock, Inverness, and Mr Ian D. Macdonald, Lochardil, Inverness.

Horses entered for Jumping numbered more than was anticipated. These Competitions continue to be very popular with the general public.

SHEEP, PIGS, &C.

With a total entry of 392, Sheep were strongly represented. For the first time in the history of the Society classes were provided for North Country Cheviot Sheep and these were well supported both in respect of numbers and quality. There was a representative entry of Goats. In the Pig Section, only Large Whites were at the Show, the other two sections for Middle Whites and Large Blacks having been cancelled on account of insufficient entries. The winners of the Prince of Wales Gold and Silver Champion Medals are shown in Figs. 28 to 39.

There were the usual sections for Poultry, Dairy Produce, Honey, Wool, and Rural Industries, each of which provided an interesting display. Classes were again included for Eggs, and these obtained a good entry. The Rabbit Section, so far as numbers were concerned, was disappointing.

The Horse-Shoe Making Competition was continued at Inverness, and this and the Horse-Shoeing Competitions were of great interest to many visitors to the Show.

With many outstanding and beautiful exhibits the Horticultural Section provided a bright and pleasing display.

The popularity of Live Stock Judging Competitions was again clearly demonstrated by the fact that 93 competitors took part in the Competition.

Buttermaking Competitions, instituted for the first time at Edinburgh last year, were again held, and the work of the candidates was of high merit.

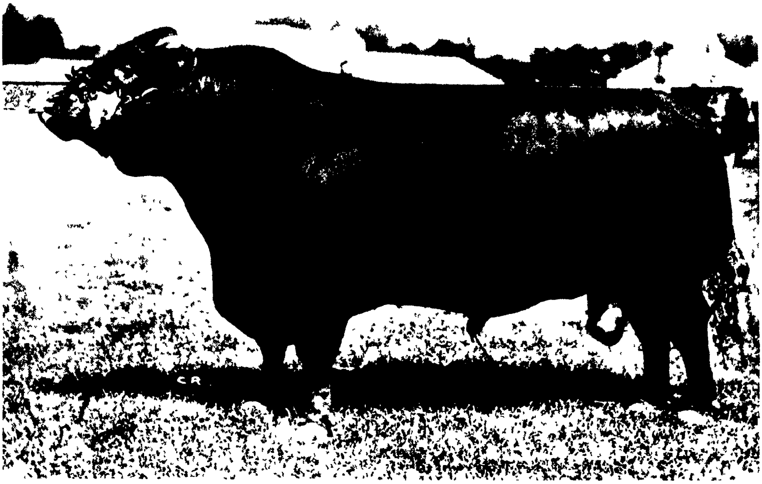


Fig. 13.—SHORTHORN BULL, "BALCAIRN COLONEL" 227,865.

Winner of Prince of Wales Champion Gold Medal for best Shorthorn animal, Inverness Show, 1932 The property of Mr Albert James Marshall, Bridgebank Stranraer. Bred by Mr Falconer L. Wallace of Candacraig, Strathdon. Age four years and three months.

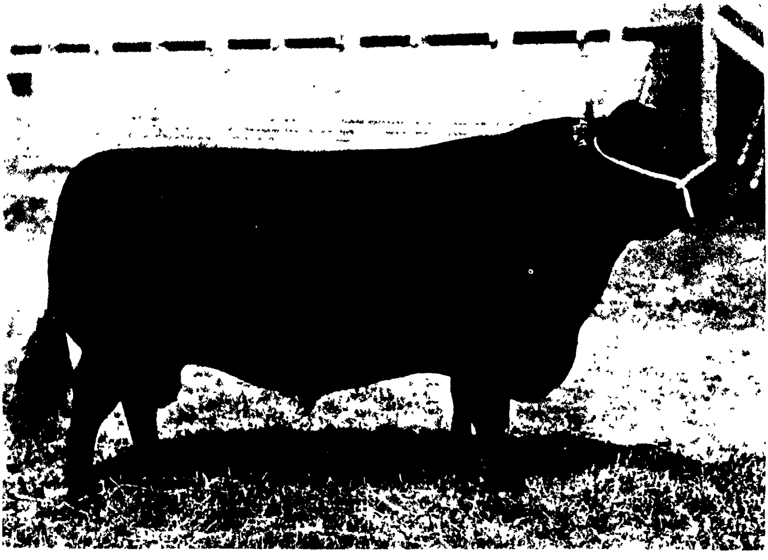


Fig. 14 —ABERDEEN-ANGUS BULL, "JARVIE ERIC" 67,784.

Winner of Prince of Wales Champion Gold Medal for best Aberdeen-Angus animal, Inverness Show, 1932 The property of Mr Andrew Thomson Reid, Auchterarder House, Auchterarder. Bred by Mr J. E. Kerr of Harviestoun, Dollar. Age four years and four months.

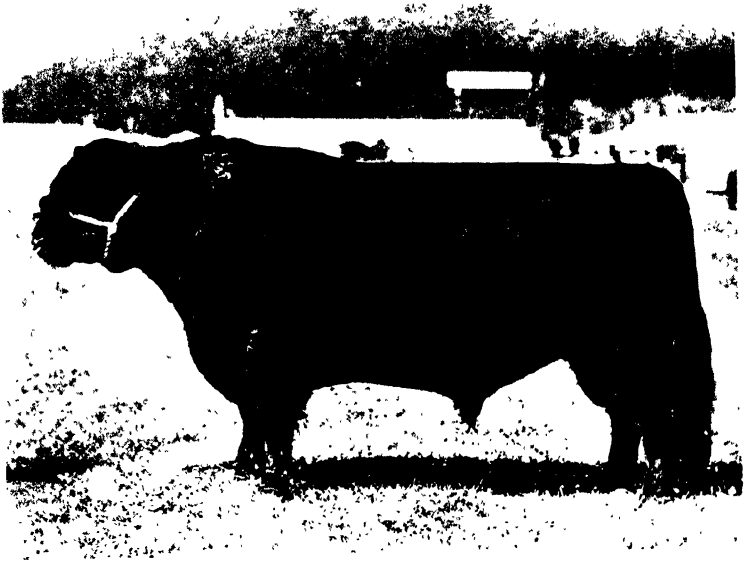


Fig. 15.—Galloway Bull, "Excelsior of Castle Milk" 15,884.

Winner of Prince of Wales Champion Gold Medal for best Galloway animal, Inverness Show, 1932. The property of Sir John William Buchanan-Jardine of Castlemilk, Bart., Castlemilk, Lockerbie. Bred by the late Sir Robert W. Buchanan Jardine of Castlemilk, Bart., Castlemilk, Lockerbie. Age seven years and three months.

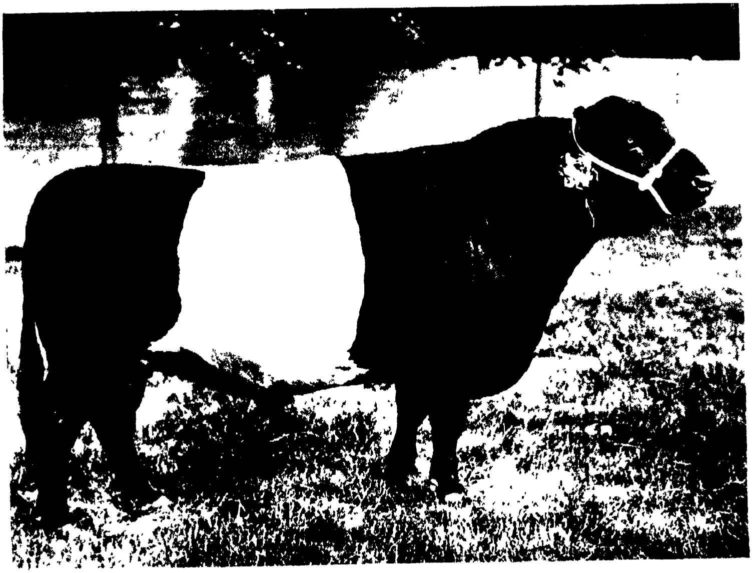


Fig. 16.—Belted Galloway Bull, "Allington Concrete" 167 B

Winner of Prince of Wales Champion Gold Medal for best Belted Galloway animal, Inverness Show, 1932. The property of General Sir Ian Hamilton, 1 Hyde Park Gardens, London. Bred by Mr G. H. Woodman, Osbourne House, Polegate, Sussex. Age eight years and five months.

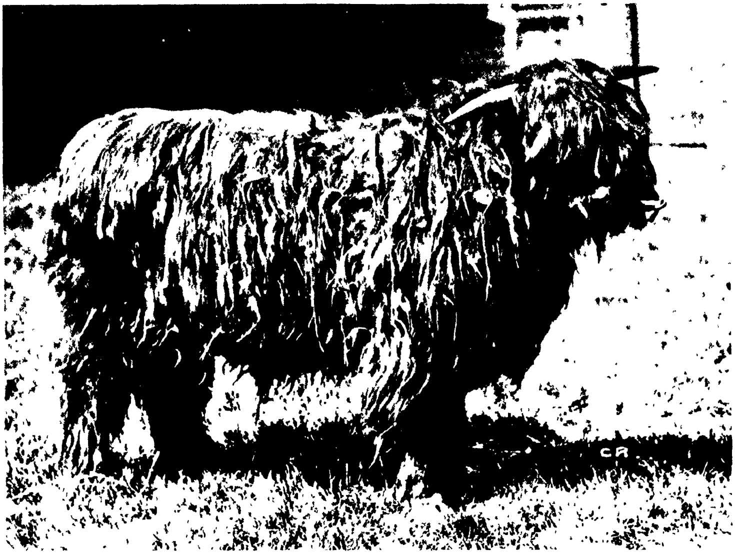


Fig. 17.—Highland Bull, ' An Froiseil Riabhach of Killundine" 3656.

Winner of Prince of Wales Champion Gold Medal for best Highland animal, Inverness Show, 1932 Bred by and the property of Mrs Lees Milne, Killundine, Drimnin, Argyll Age one year and four months

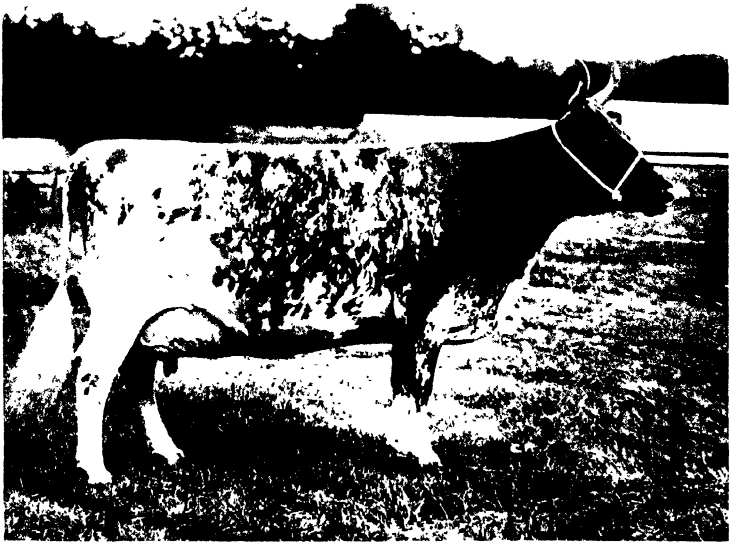


Fig. 18.—Ayrshire Cow, "Meikle Kilmory Rosary" 91,252.

Winner of Prince of Wales Champion Gold Medal for best Ayrshire animal, Inverness Show, 1932. The property of Mr James M'Alister, Meikle Kilmory, Rothesay Bred by Mrs M'Alister, Meikle Kilmory, Rothesay. Age nine years and two months

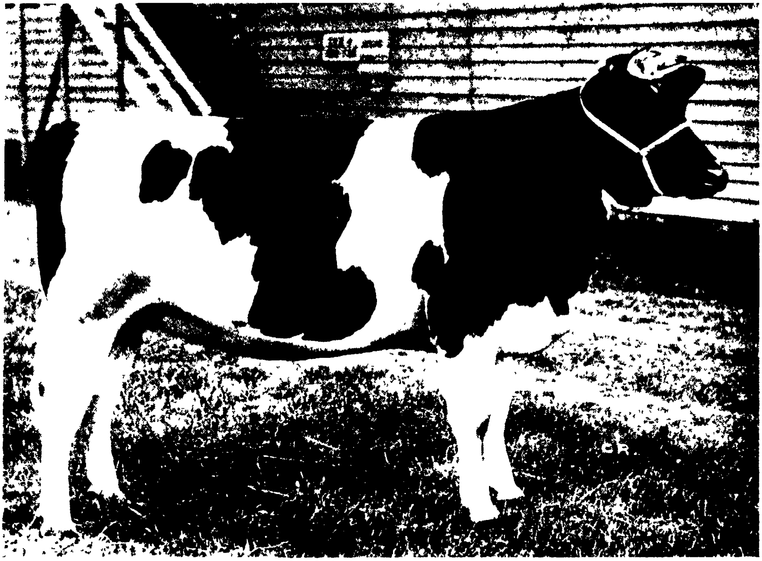


Fig. 19.—British Friesian Heifer, "Douneside Becula 5th" 145,894.

Winner of Prince of Wales Champion Gold Medal for best British Friesian animal, Inverness Show, 1932. Bred by and the property of The Trustees of Sir Alasdair W. MacRobert, Bart , Douneside Home Farm, Tarland, Aboyne Age two years

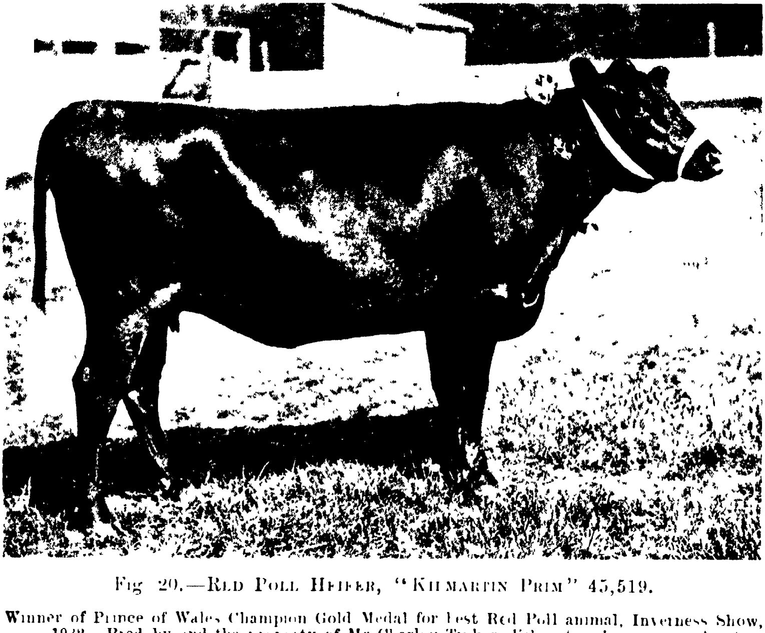


Fig 20.—Red Poll Heifer, "Kilmartin Prim" 45,519.

Winner of Prince of Wales Champion Gold Medal for best Red Poll animal, Inverness Show, 1932. Bred by and the property of Mr Charley Tinker, Kilmartin, Inverness Age two years and five months.

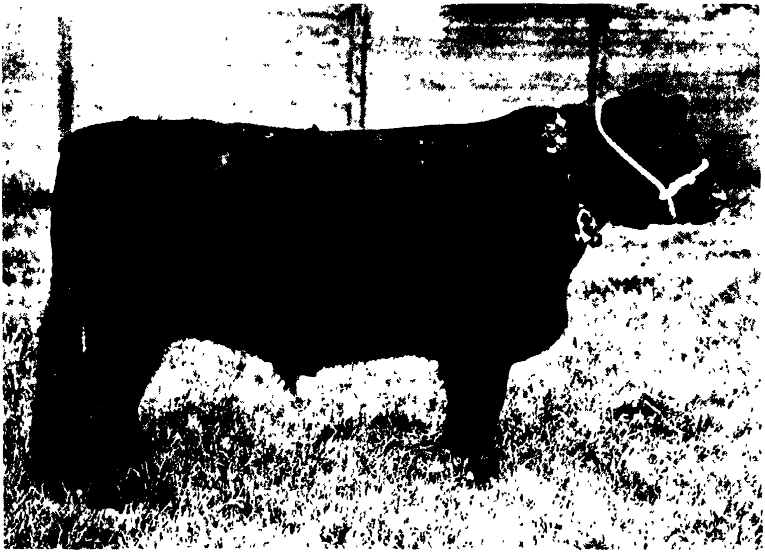


Fig. 21. Galloway Bullock, "Xmas Gift."

Winner of Prince of Wales Champion Silver Medal for best Fat animal, Inverness Show 1932. The property of Mr R. Jardine Paterson, Balgray, Lockerbie. Bred by Mr C. Jeffrey, Wylehole, Lockerbie. Age two years and six months.

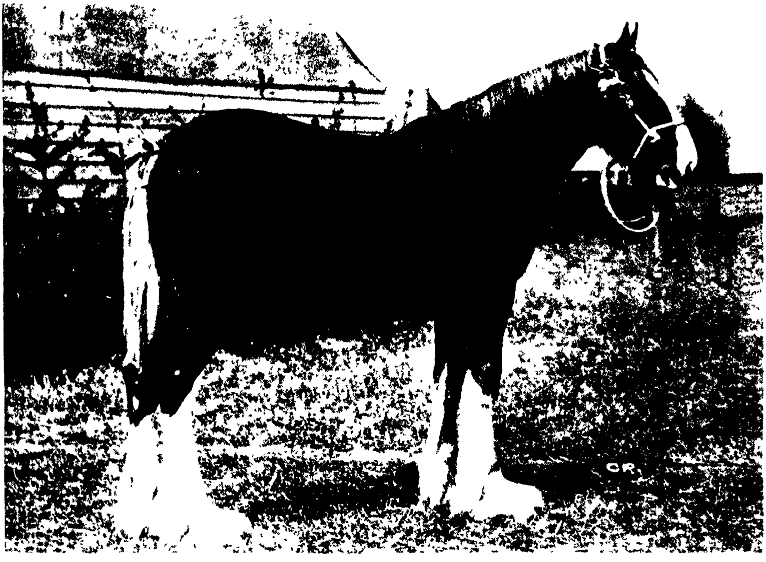


Fig. 22.—Clydesdale Entire Colt.

Winner of President's Medal for best Clydesdale Stallion or Colt, Inverness Show, 1932. The property of Messrs T. & M. Templeton, Sandyknowe, Kelso. Bred by Mr Robert Wilson, Kirkcolm, Ballantrae. Age one year.

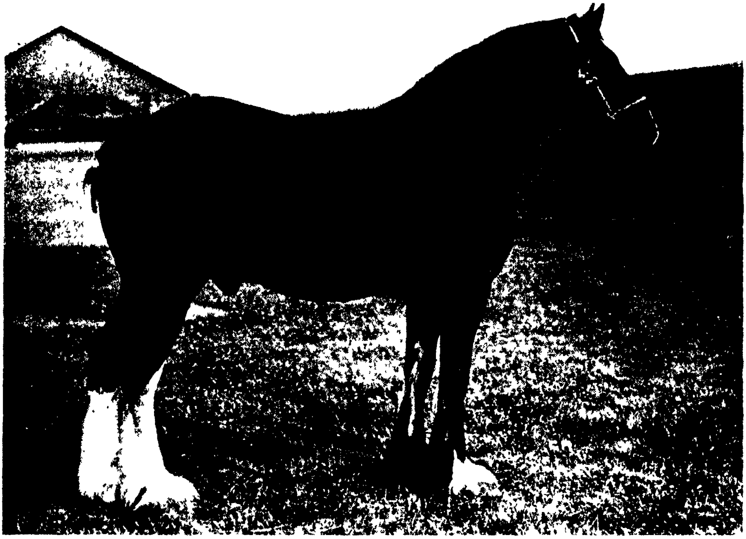


Fig. 23.—CLYDESDALE GELDING, "JIM."

Winner of President's Medal for best Clydesdale Gelding, Inverness Show, 1932. The property of Mr James Clark, Windlaw, Carmunnock. Bred by Mrs Mundell, Dalilongart, Sandbank. Age four years and one month

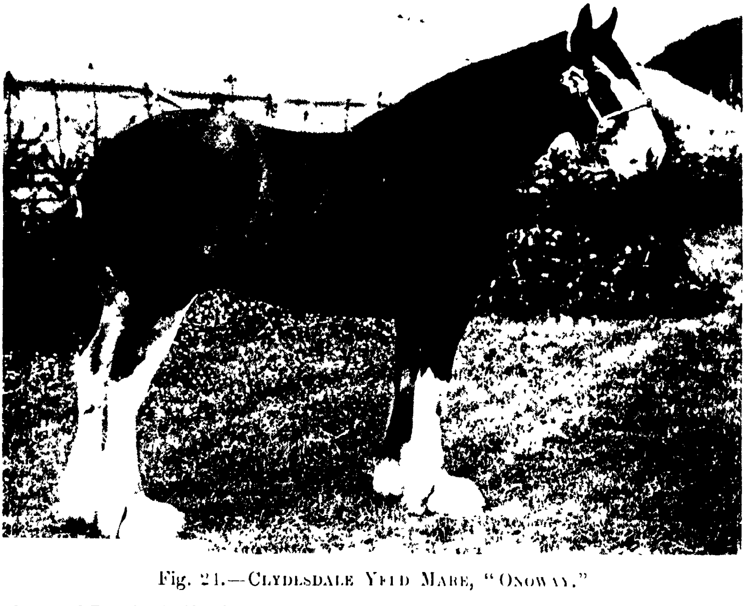


Fig. 24.—CLYDESDALE YELD MARE, "ONOWAY."

Winner of President's Medal for best Clydesdale Mare or Filly, Inverness Show, 1932. The property of Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire. Bred by Mr John Barbour, Leaths, Castle-Douglas. Age four years and one month.

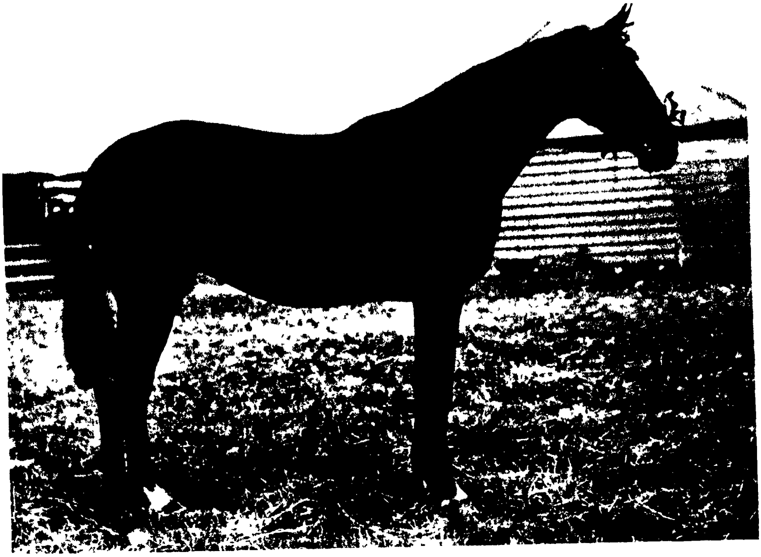


Fig. 25.—HUNTER FILLY, "HARMONY VII." 7619.

Winner of President's Medal for best Hunter, Inverness Show, 1932. Bred by and the property of Sir John William Buchanan Jardine of Castlemilk, Bart., Castlemilk, Lockerbie. Age two years and one month.

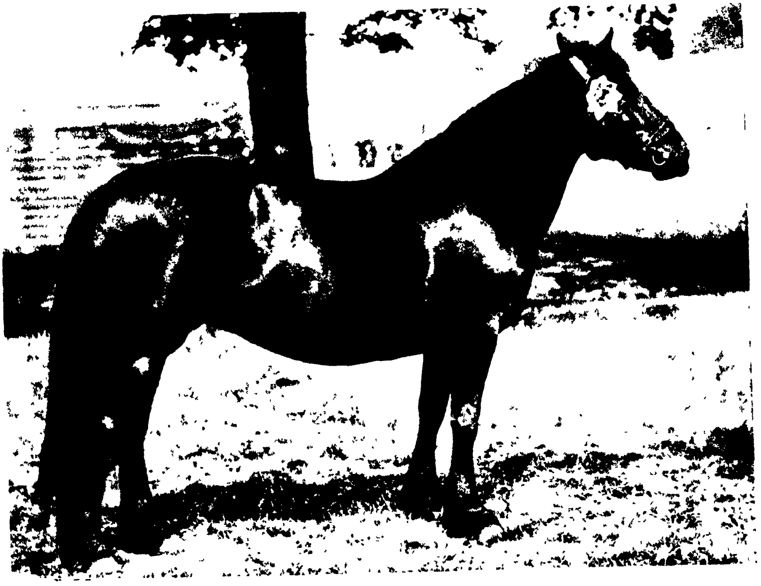


Fig. 26.—WESTERN ISLAND PONY MARE, "ISLE OF ARRAN BONNIE JEAN" 1408.

Winner of President's Medal for best Highland or Western Island Pony, Inverness Show, 1932. The property of Major D. G. Moncrieff Wright, M.C., of Kinmonth, Bridge of Earn. Bred by H.M. The King, Balmoral Castle, Ballater. Age twelve years and one month.

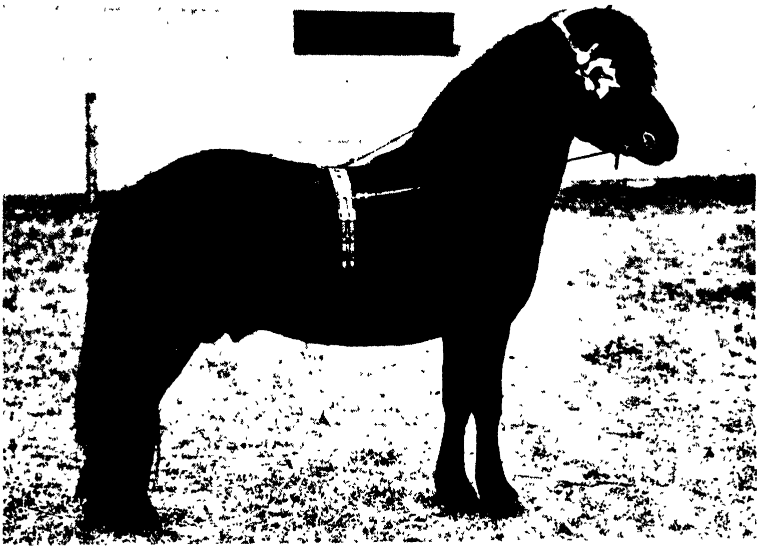


Fig. 27.—Shetland Pony Stallion, "Kilmagur of Penniwells" 1246.

Winner of President's Medal for best Shetland Pony, Inverness Show, 1932. The property of Mr William Mungall of Transy, Dunfermline. Bred by Mrs Etta Dullus, Penniwells, Elstree, Herts. Age six years.

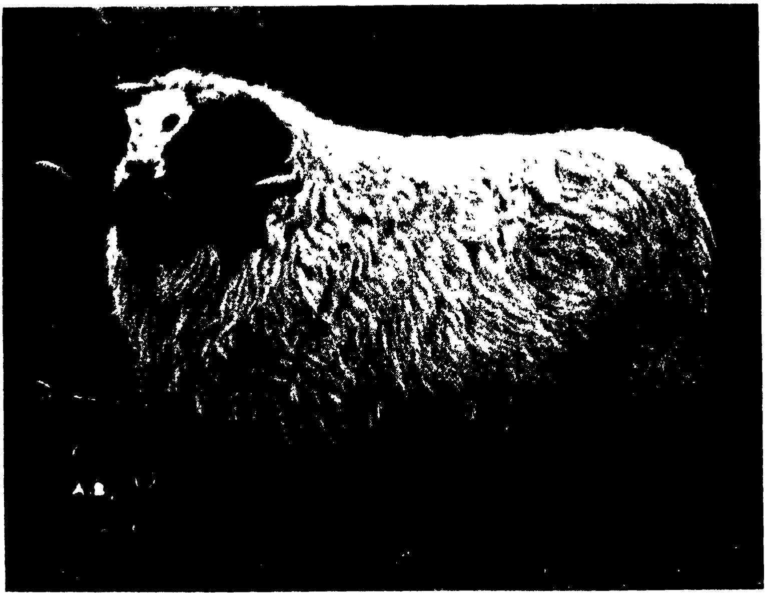


Fig. 28.—Blackface Tup.

Winner of Prince of Wales Champion Gold Medal for best Blackface Sheep, Inverness Show, 1932. The property of Mr John Paterson, High Craigton, Milngavie. Bred by Mr Charles Cadzow, Weston, Dunsyre. Age two shear.

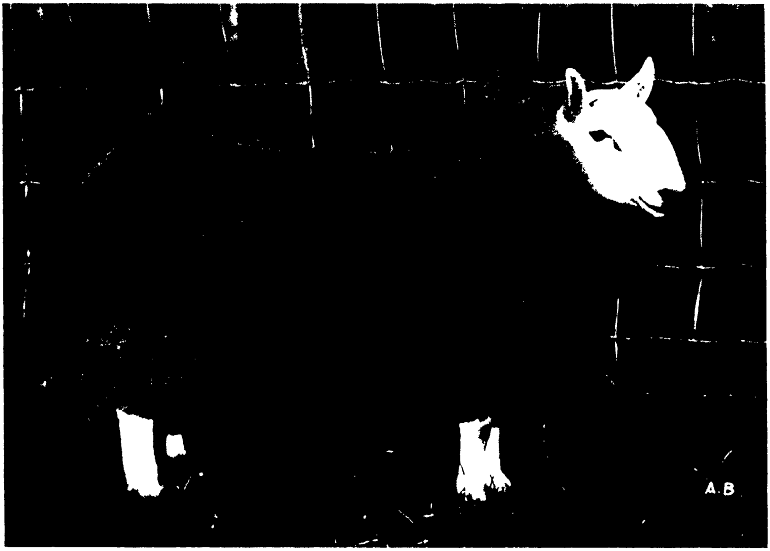


Fig 29.—CHEVIOT SHEARLING TUP.

Winner of Prince of Wales Champion Gold Medal for best Cheviot Sheep, Inverness Show, 193
Bred by and the property of Mr Walter S Douglas, Hindhope, Jedburgh.

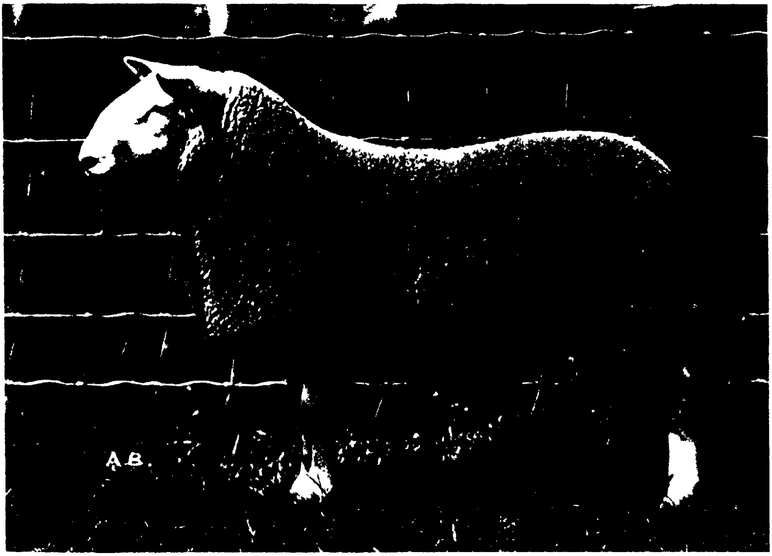


Fig. 30.—NORTH COUNTRY CHEVIOT SHEARLING TUP, "SAMSON."

Winner of President's Medal for best North Country Cheviot Sheep, Inverness Show, 1932.
Bred by and the property of Mr Peter Maxwell, Thurdistoft, Thurso.

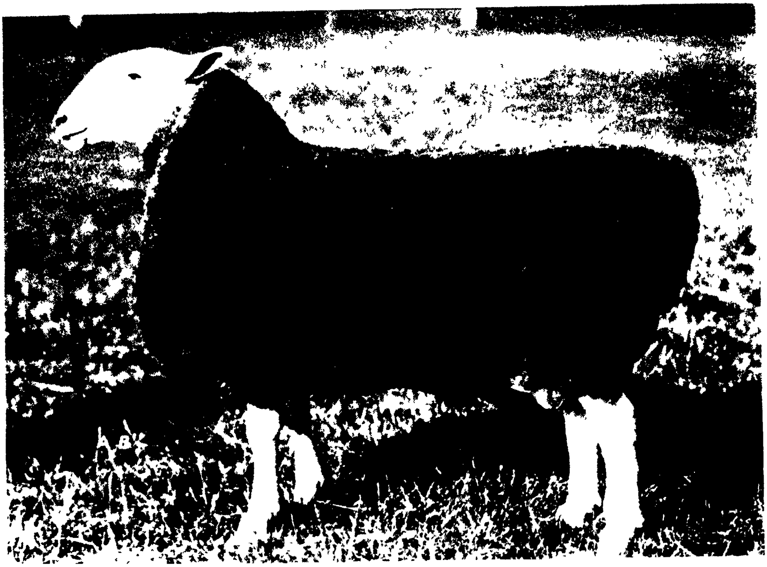


Fig. 31.—Border Leicester Tup, "Sandyknowe Evergreen"

Winner of Prince of Wales Champion Gold Medal for best Border Leicester Sheep, Inverness Show, 1932 The property of Messrs James Howie & Sons, Muirside, Dumfries Bred by Messrs T. & M. Templeton, Sandyknowe, Kelso. Age two shear

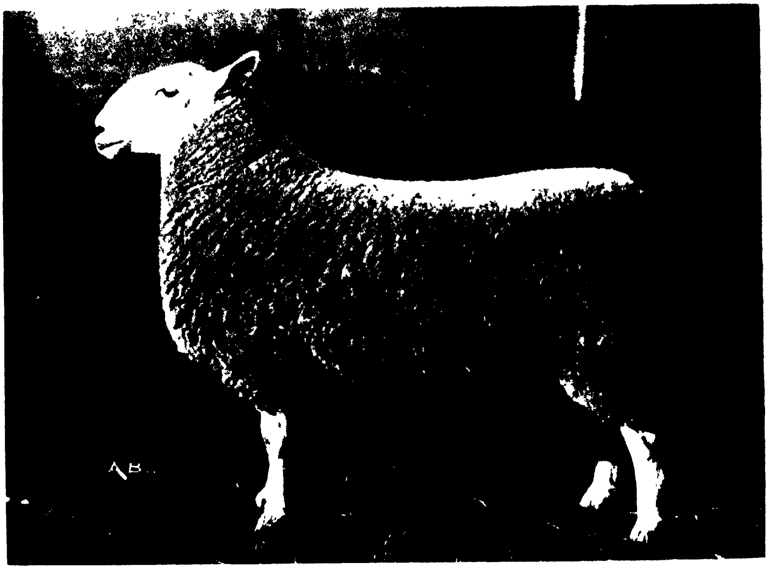


Fig. 32.—Half-Bred Shearling Tup.

Winner of Prince of Wales Champion Silver Medal for best Half-Bred Sheep, Inverness Show, 1932. Bred by and the property of Mr Thomas Armstrong, East Cote, Hawick.

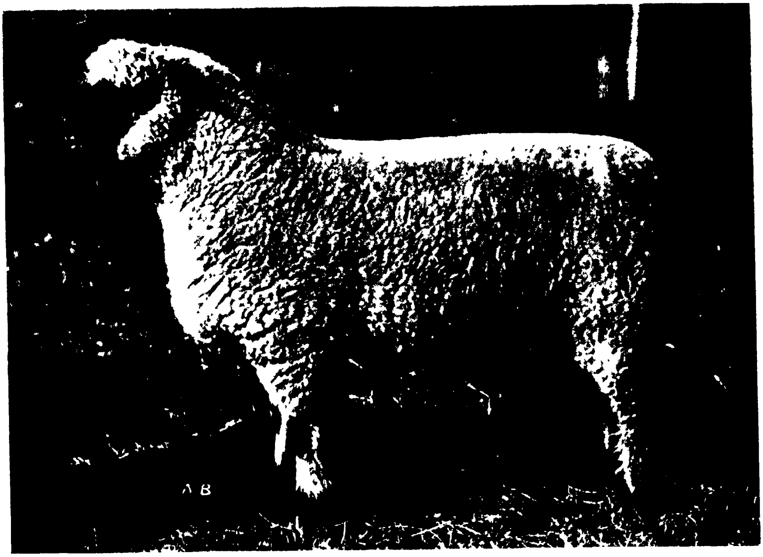


Fig. 33.—Oxford Down Tup Lamb.

Winner of Prince of Wales Champion Gold Medal for best Oxford Down Sheep, Inverness Show, 1932 Bred by and the property of Messrs T. & M. Templeton, Sandyknowe, Kelso

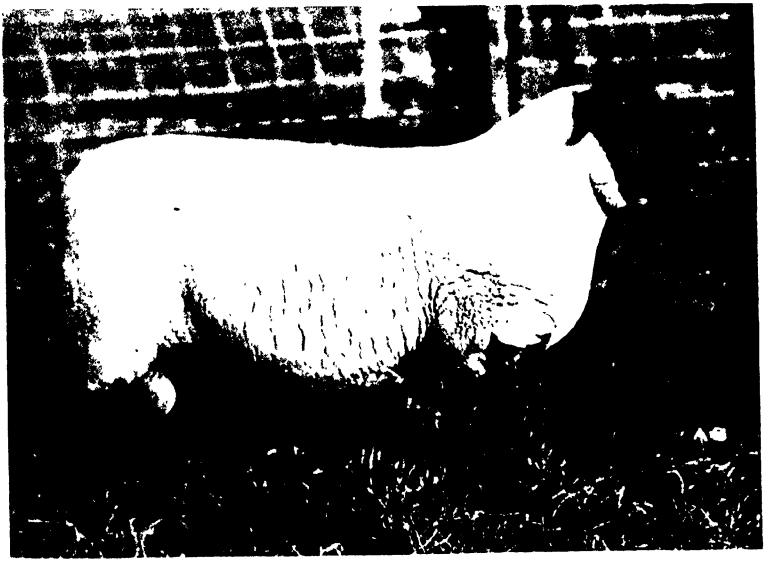


Fig. 34.—Suffolk Tup, "Kirton Protection" 22,107.

Winner of Prince of Wales Champion Gold Medal for best Suffolk Sheep, Inverness Show, 1932. The property of Messrs R. & W. Whitton, East Nevay, Eassie, Angus. Bred by Mr Stuart Paul, Kirton Lodge, Trimley, Suffolk. Age one shear

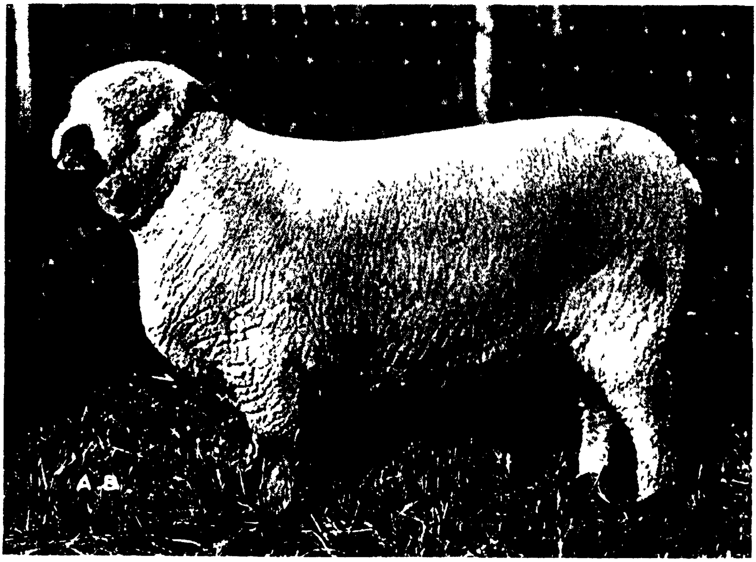


Fig. 35.—Shropshire Tup.

Winner of Prince of Wales Champion Silver Medal for best Shropshire Sheep, Inverness Show, 1932 Bred by and the property of the late Thomas A. Buttar, Corston, Coupar-Angus Age one shear.

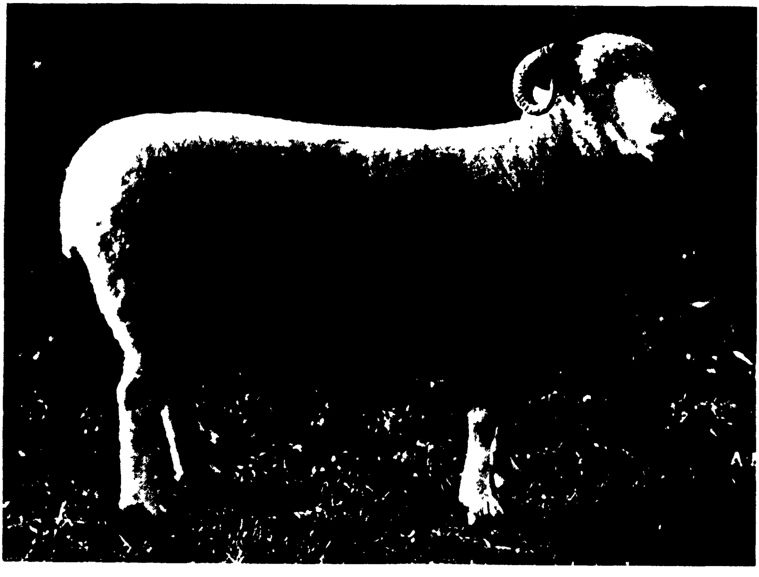


Fig. 36.—Dorset Horn Ewe.

Winner of Prince of Wales Champion Silver Medal for best Dorset Horn Sheep, Inverness Show, 1932. Bred by and the property of The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline. Age four shear

Fig. 37.—THREE DORSET DOWN LAMBS.

Winner of Prince of Wales Champion Silver Medal for best pen of Fat Sheep, Inverness Show, 1932. Bred by and the property of Lord Bruce, Broomhall, Dunfermline.

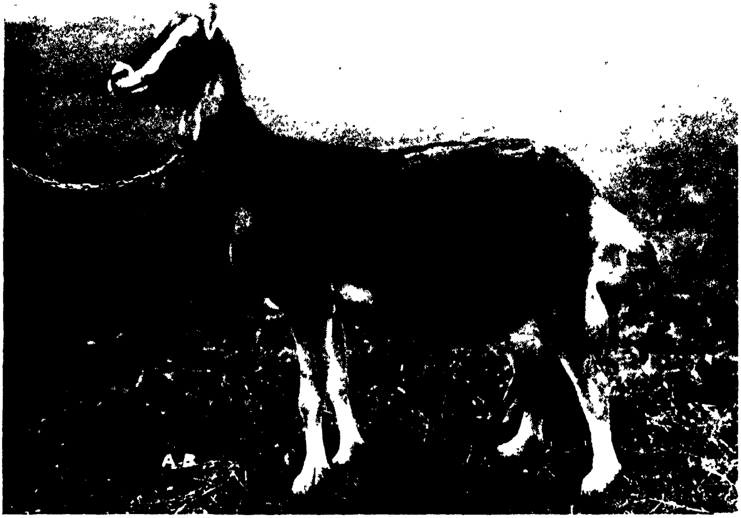


Fig. 38.—British Goat, "R3 Didgemere Marvel Q*Q*Q*Q " 8112.

Winner of Prince of Wales Champion Silver Medal for best animal in the Goat Classes, Inverness Show, 1932. The property of Mrs R. W. Rotherford, The Pines, Throckley, Newcastle-upon-Tyne Bred by Mrs Abbey, Doune Hall, Roydon, Essex. Age five years and three months.

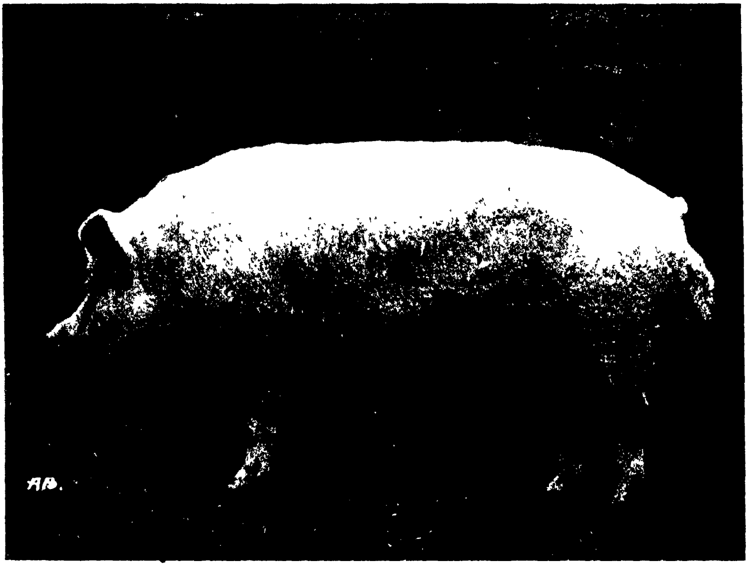


Fig. 39.—LARGE WHITE BOAR, "TOUCH HERCULES" 73,119.

Winner of Prince of Wales Champion Gold Medal for best Large White Pig, Inverness Show, 1932. Bred by and the property of Mr A. J. Elder, City Mills, Dunfermline. Age three years and five months.

PREMIUMS AWARDED BY THE SOCIETY IN 1932.

INVERNESS SHOW.

21st, 22nd, 23rd, and 24th June 1932.

ABBREVIATIONS.—V., *Very Highly Commended.* H., *Highly Commended.* C., *Commended.*

CATTLE

SHORTHORN.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Shorthorn Animal.

No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).

Reserve—No. 8 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, " Doune Mercury " (243,649).

Paisley Perpetual Gold Challenge Cup, value £300, *for best Shorthorn, " Extra Stock " being eligible to compete.* This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913.

No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).

Reserve—No. 8 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, " Doune Mercury " (243,649).

The Duthie Perpetual Challenge Cup, value £150, *for best Animal in the Shorthorn Classes, " Extra Stock " being eligible to compete.* This Cup was gifted by the late Mr William Duthie, Collynie.

No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).

Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20 given by the Shorthorn Society.

No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).

Silver Medal *to the Breeder of the Winner of above Prize*—given by the Shorthorn Society.

No. 7 Wallace, Falconer L., of Candacraig, Strathdon.

Tweeddale Gold Medal, value £25, *for best Shorthorn Bull. Annual free income from fund of* £500.

No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).

Breeder of best Bull of any age in Classes 1 *to* 5—The Silver Medal.

No. 7 Wallace, Falconer L., of Candacraig, Strathdon.

CLASS 1. BULL, born before 1st December 1929. PREMIUMS, £15, £10, £5, and £3.

1st No. 7 Marshall, Albert James, Bridgebank, Stranraer, " Balcairn Colonel " (227,865).
2nd No. 4 Macintyre, A. M., Towie Barclay, Auchterless, " Crieffvechter Blockade " (236,311).
3rd No. 5 M'William, R. S., Garguston, Muir of Ord, " Rosehaugh Clipper Star " (239,944).
4th No. 6 Marshall, Albert James, Bridgebank, Stranraer, " Cruggleton Patrician " (229,491).
V No. 1 Cameron, James, Balnakyle, Munlochy, " Doune Buccaneer " (215,148).

CLASS 2. BULL, born on or after 1st December 1929, and before 1st April 1930.—PREMIUMS, £15, £10, £5, and £3.

1st No. 8 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, " Doune Mercury " (243,649).
2nd No. 12 Robertson, Major W. B., Colton, Dunfermline, " Balcairn Boleta " (241,653).
3rd No. 9 Douglas, George, Cadbollmount, Fearn, Ross-shire, " Mount Marine " (245,925).

CLASS 3. BULL, born on or after 1st April 1930, and before 1st December 1930.—PREMIUMS, £12, £8, £4, and £2.

1st No. 14 Marshall, Albert James, Bridgebank, Stranraer, " Cruggleton Prideaux " (243,352).
2nd No. 13 Law, Messrs, Mains of Sanquhar, Forres, " Sanquhar Right Away " (247,027).

CLASS 4. BULL, born on or after 1st December 1930, and before 1st April 1931.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 17	Cathcart, Lady, Cluny Castle, Sauchen, "Calrossie Scout Leader."
2nd	No. 25	Marshall, Albert James, Bridgebank, Stranraer, "Gondolier."
3rd	No. 29	Piper, James, of The Grange, Burntisland, "Letham Founder" (245,372).
4th	No. 22	M'William, R. S., Garguston, Muir of Ord, "Garguston Golden Flare."
V	No. 26	Marshall, Albert James, Bridgebank, Stranraer, "Cruggleton Alphy."
H	No. 28	Marshall, Albert James, Bridgebank, Stranraer, "Cruggleton Norrie."
C	No. 20	MacGillivray, Finlay, Aldie, Tain, Ross-shire, "Calrossie Satisfaction."
C	No. 15	Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Coldoch Dreadnought."

The Emilio R. Casares, jun., "Junior Champion Cup," value £50, *for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test.* Given by Mr Emilio R. Casares, jun.

No. 30 Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Balcairn Amir."

Reserve—No. 36 Lovat, General Lord, K.T., Beaufort Castle, Beauly, "Beaufort Favourite."

CLASS 5. BULL, born on or after 1st April 1931.—PREMIUMS, £10, £6, £4, and £2.

1st	No. 30	Baird, J., & Co. (Falkirk), Limited, Bantaskin, Falkirk, "Balcairn Amir."
2nd	No. 36	Lovat, General Lord, K.T., Beaufort Castle, Beauly, "Beaufort Favourite."
3rd	No. 38	Macintyre, A. M., Towie Barclay, Auchterless, "Saltoun Claret's Pride."
4th	No. 35	Lee, Norman N., Stonelands, Arncliffe, Skipton-in-Craven, "Stonelands Royal Ensign."
V	No. 31	Barr, John Fillians, Killineer House, Drogheda, Co. Louth, "Killineer President."
H	No. 32	Gordon, The Trustees of the late A. P., Bindal, Portmahomack, Ross-shire, "Balmuchy Masterpiece."
C	No. 33	Law, Messrs, Mains of Sanquhar, Forres, "Sanquhar Sir Lavender."

Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20 given by the Shorthorn Society.

No. 44 Marshall, Albert James, Bridgebank, Stranraer, "Augusta Melissa" (99,582).

Silver Medal *to the Breeder of the Winner of above Prize*—given by the Shorthorn Society.

No. 44 Marshall, Albert James, Bridgebank, Stranraer.

CLASS 6. COW, in Milk, born before 1st December 1928.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 44	Marshall, Albert James, Bridgebank, Stranraer, " Augusta Melissa " (99,582).
2nd	No. 43	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire, " Calrossie Miss Ina " (99,274).
3rd	No. 42	Gordon, The Trustees of the late A. P., Bindal, Portmahomack, Ross-shire, " Naemoor Buttercup 4th " (111,085).
4th	No. 41	Brown, James P., Dipple, Fochabers, " Nonpareil Dipple Freesia " (105,413).
V	No. 40	Brown, James P., Dipple, Fochabers, " Dipple Averne 18th " (94,530).

CLASS 7. COW, in Milk, born on or after 1st December 1928, and before 1st December 1929.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 45	MacWilliam, W. S., Garbity, Orton Station, " Garbity Nonpareil 4th " (120,835).

CLASS 8. COW or HEIFER, born on or after 1st December 1929, and before 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 51	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire, Heifer, " Calrossie Princess Hunlee " (130,762).
2nd	No. 50	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire, Heifer, " Calrossie Roan Flora " (130,764).
3rd	No. 47	Crawford and Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, Cow, " Balcarres Joyce " (127,220).

CLASS 9. HEIFER, born on or after 1st December 1930, and before 1st April 1931.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 55	MacGillivray, Finlay, Aldie, Tain, Ross-shire, " Calrossie Eliza Mary."
2nd	No. 56	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire, " Calrossie Blyth Pam."
3rd	No. 62	Smith, R. Laidlaw, Pittodrie, Pitcaple, " Schivas Lady Broadhooks."
4th	No. 54	Douglas, George, Cadbollmount, Fearn, Ross-shire, " Mount Butterfly 3rd."
V	No. 63	Snadden, W. M'Nair, of The Coldoch, Blair Drummond, " Cluny Augusta 31st."
H	No. 57	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire, " Calrossie Broadhooks Joan."
C	No. 60	Mackenzie, R. G., Kildun, Dingwall, " Kildun Nonpareil 3rd."
C	No. 61	M'William, R. S., Garguston, Muir of Ord, " Golden Welcome."
C	No. 59	MacGillivray, K. P., Kirkton, Bunchrew, " Lady Zoe 4th " (130,778).

CLASS 10. HEIFER, born on or after 1st April 1931.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 65	Cathcart, Lady, Cluny Castle, Sauchen, " Cluny Rosewood 20th."
2nd	No. 67	Fletcher, Captain A. M. Talbot, of Saltoun, Saltoun Hall, Pencaitland, " Saltoun Pearl Princess 3rd."

3rd No. 68 M'William, R. S., Garguston, Muir of Ord, "Garguston Augusta 11th."
4th No. 69 Snadden, W. M'Nair, of The Coldoch, Blair Drummond, "Coldoch Rosewood."
V No. 66 Crawford and Balcarres, The Earl of, K.T., Balcarres, Colinsburgh, "Balcarres Rosaline."

ABERDEEN-ANGUS.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Aberdeen-Angus Animal.

No. 77 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Jarvie Eric" (67,784).

Reserve—No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Elinka of Doonholm" (87,315).

Silver Cup, value £50, *for best Group of Aberdeen-Angus Cattle, consisting of one Bull and two Females. "Extra Stock" eligible to compete.* Given by Mr W. Gilchrist Macbeth of Dunira, Comrie.

No. 74 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Prince Benson of Doonholm" (71,867).
No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Elinka of Doonholm" (87,315).
No. 102 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Moselle of Doonholm" (90,615).

Ballindalloch Challenge Cup, value £50, *for the best Bull of any age in Classes* 11 *to* 14. Given by the late Sir George Macpherson Grant, Bart.

No. 77 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Jarvie Eric" (67,784).

Silver Cup, value 50 guineas, *for best Aberdeen-Angus Bull born on or after* 1*st December* 1929. Given by Senor Eduardo Estanguet, Argentina.

No. 87 Findlay, Sir Edmund, Bart., Home Farm, Aberlour, "Euxidor 3rd" (77,307).

Breeder of best Bull of any age in Classes 11 *to* 14—The Silver Medal.

No. 77 Kerr, J. E., of Harviestoun, Dollar.

Exhibitor of the winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 77 Reid, Andrew Thomson, Auchterarder House, Auchterarder.

Breeder (if not also the Exhibitor) of the winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 77 Kerr, J. E., of Harviestoun, Dollar.

CLASS 11. BULL, born before 1st December 1929.—PREMIUMS, £15, £10, £5, and £3.

1st No. 77 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Jarvie Eric" (67,784).
2nd No. 75 Mackay, Charles, of Balnastraid, Carr Bridge, Inverness-shire, "Emerald of Balnastraid" (73,581).
3rd No. 74 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Prince Benson of Doonholm" (71,867).
4th No. 78 Robertson, Peter D., Castlecraig, Nigg, Ross-shire, "Eclotus of Candacraig" (70,120).
V No. 72 Findlay, Sir Edmund, Bart., Home Farm, Aberlour, "Euxidor" (70,578).
H No. 79 Waddell, James Dalziel, Clury, Grantown-on-Spey, "Rosslyn of Ballindalloch" (68,858).
C No. 76 Petrie, John M'G., Asleid, New Deer, "Esmero" (70,515).

CLASS 12. BULL, born on or after 1st December 1929, and before 1st December 1930.—PREMIUMS, £15, £10, £5, and £3.

1st No. 80 Cunningham-Jardine, Mrs D. A. J., Jardine, Lockerbie, "Jujuy" (74,424).
2nd No. 82 Hendry, Robert, Advie Mains, Advie, "Evelex of Ballindalloch" (73,886).
3rd No. 86 Walker, Robert W., Portlethen, Aberdeen, "Bugbane" (73,006).
4th No. 85 Sandeman, F. D. Stewart, The Laws, Kingennie, Angus, "Jack Johnston of Abergeldie" (74,281).
V No. 81 Grant, Andrew Dykes, Mains of Dalvey, Advie, "Grease Paint" (74,159).

CLASS 13. BULL, born on or after 1st December 1930, and before 1st March 1931.—PREMIUMS, £12, £8, £4, and £2.

1st No. 87 Findlay, Sir Edmund, Bart., Home Farm, Aberlour, "Euxidor 3rd" (77,307).
2nd No. 89 Walker, Francis W., of Leys, Leys Castle, Inverness-shire, "Primus of Lethen" (78,679).
3rd No. 88 Forteviot, Lord, Dupplin Castle, Perth, "Prince of Musca" (78,740).

CLASS 14. BULL, born on or after 1st March 1931.—PREMIUMS, £10, £6, £4, and £2.

1st No. 90 Allan, John M., Easter Duthil, Carr Bridge, "Estimate of Duthil" (77,259).
2nd No. 93 Macbeth, W. Gilchrist, of Dunira, Comrie, "Prince Peaceful of Minmore" (78,753).
3rd No. 96 Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Juror Eric" (77,996).
4th No. 97 Robertson, Peter D., Castlecraig, Nigg, Ross-shire, "Epic of Castlecraig" (77,099).
V No. 94 Marshall & Mitchell, Bleaton, Blairgowrie, "Emblazon of Bleaton" (77,009).
H No. 91 Grant, John A., Wester Rarichie, Nigg Station, Ross-shire, "P.D. of Rarichie" (78,457).
C No. 95 Petrie, John M'G., Asleid, New Deer, "Primor" (78,672).

Ballindalloch Challenge Cup, value £50, *for the best Cow of any age in Classes* 15 *to* 17. Given by the late Sir John Macpherson Grant, Bart.

No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, " Elinka of Doonholm " (87,315).

Exhibitor of the winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr.

Breeder (if not also the Exhibitor) of the winner of the Ballindalloch Challenge Cup—The Silver Medal.

(Not awarded.)

Silver Cup, value £50, *for the best Female Animal of the Aberdeen-Angus breed, " Extra Stock " eligible to compete.* Given by Mr Falconer L. Wallace of Candacraig, Strathdon.

No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, " Elinka of Doonholm " (87,315).

Champion Gold Medal, value £10, *for best Animal in the Breeding Classes, breeding animals shown as " Extra Stock " eligible to compete.* Given by the Aberdeen-Angus Cattle Society.

No. 77 Reid, Andrew Thomson, Auchterarder House, Auchterarder, " Jarvie Eric " (67,784).

CLASS 15. COW, in Milk, born before 1st December 1928.—PREMIUMS, £12, £8, £4, and £2.

1st No. 100 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, " Elinka of Doonholm " (87,315).
2nd No. 98 Beddie, James, Banks, Strichen, " Gammer Ebena " (86,035).
3rd No. 99 Hendry, Robert, Advie Mains, Advie, " Evlessa 4th " (87,141).

CLASS 16. COW, in Milk, born on or after 1st December 1928, and before 1st December 1929.—PREMIUMS, £12, £8, £4, and £2.

1st No. 106 Walker, Robert W., Portlethen, Aberdeen, " Pride Flora of Coull " (90,736).
2nd No. 102 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, " Moselle of Doonholm " (90,615).
3rd No. 105 Sandeman, F. D. Stewart, The Laws, Kingennie, Angus, " Blackbird 8th of Ruthven " (90,852).
4th No. 101 Hendry, Robert, Advie Mains, Advie, " Elemet " (90,463).
V No. 104 Macbeth, W. Gilchrist, of Dunira, Comrie, " Melodia of Doonholm " (90,614).

CLASS 17. COW or HEIFER, born on or after 1st December 1929 and before 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 112	Kerr, J. E., of Harviestoun, Dollar, Heifer, "Black Jewel of Harviestoun" (93,922).
2nd	No. 108	Beddie, James, Banks, Strichen, Heifer, "Gammer Debera" (92,534).
3rd	No. 114	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, Heifer, "Miss Belle of Doonholm" (93,915).
4th	No. 115	Walker, Robert W., Portlethen, Aberdeen, Heifer, "Portlethen Pride 16th" (95,312).
V	No. 110	Findlay, Sir Edmund, Bart., Home Farm, Aberlour, Heifer, "Euxida 5th" (93,303).
H	No. 111	Honeyman, R. Wemyss, Derculich, Strathtay, Heifer, "Glorina of Nuide" (92,508).
C	No. 107	Beddie, James, Banks, Strichen, Heifer, "Gammer Gratia" (92,547).

CLASS 18. HEIFER, born on or after 1st December 1930, and before 1st March 1931.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 122	Findlay, Sir Edmund, Bart., Home Farm, Aberlour, "Euxida 7th" (96,482).
2nd	No. 127	Kerr, J. E., of Harviestoun, Dollar, "Erase of Harviestoun" (97,060).
3rd	No. 126	Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Ecstacy of Doonholm" (97,041).
4th	No. 120	Brims, Robert, Pitcalzean, Nigg, Ross-shire, "Joanna 9th of Pitcalzean" (95,879).
V	No. 129	Sandeman, F. D. Stewart, The Laws, Kingennie, Angus, "Pride of The Laws" (98,057).
H	No. 117	Beddie, James, Banks, Strichen, "Gammer Ebenin" (95,694).
C	No. 116	Beddie, James, Banks, Strichen, "Romance of Banks" (95,707).
C	No. 125	Houldsworth, J. Hamilton, Dallas Lodge, Forres, "Ermine 2nd of Dallas" (96,939).
C	No. 130	Waddell, James Dalziel, Clury, Grantown-on-Spey, "Aclurya Beatrice" (98,405).

CLASS 19. HEIFER, born on or after 1st March 1931.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 131	Beddie, James, Banks, Strichen, "Gammer Evelta" (95,700).
2nd	No. 133	Honeyman, R. Wemyss, Derculich, Strathtay, "Elfin of Derculich" (96,922).
3rd	No. 136	Reid, Andrew Thomson, Auchterarder House, Auchterarder, "Gironta of Auchterarder" (97,856).
4th	No. 134	Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Muscatel of Doonholm" (97,050).
V	No. 137	Sandeman, F. D. Stewart, The Laws, Kingennie, Angus, "Elite Burma of Skillymarno" (96,735).
H	No. 132	Hendry, Robert, Advie Mains, Advie, "Ealasair" (96,868).

GALLOWAY.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Galloway Animal.

No. 138 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, " Excelsior of Castle Milk " (15,884).

Reserve—No. 162 Little, D. & J., Whitehill, Corrie, Lockerbie, Heifer, " Culmark Queen 2nd " (33,616).

Dr Gillespie Memorial Challenge Trophy, value £50, *for best Galloway Animal in the Breeding Classes, breeding animals shown as " Extra Stock " being eligible to compete.* Given by the Galloway Cattle Society of Great Britain and Ireland.

No. 138 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, " Excelsior of Castle Milk " (15,8

Silver Challenge Cup, value £50, *for best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Challenge Trophy, " Extra Stock " being eligible to compete.* Given by the Galloway Cattle Society to commemorate the Hundredth Show.

No. 162 Little, D. & J., Whitehill, Corrie, Lockerbie, Heifer, " Culmark Queen 2nd " (33,616).

Breeder of best Bull of any age in Classes 20 *to* 22—The Silver Medal.

No. 138 The late Sir Robert W. Buchanan-Jardine of Castlemilk, Bart.

CLASS 20. BULL, born before 1st December 1929.—PREMIUMS, £15, £10, £5, and £3.

1st No. 138 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, " Excelsior of Castle Milk " (15,884).
2nd No. 141 Moffat, W. Kennedy, Auchencheyne, Moniaive, " Radium of Tundergarth Mains " (16,747).
3rd No. 139 Graham, Andrew, Auchengassel, Twynholm, " Camlachie 2nd of Stepford " (17,364).

CLASS 21. BULL, born on or after 1st December 1929, and before 1st December 1930.—PREMIUMS, £15, £10, £5, and £3.

1st No. 145 Paterson, R. Jardine, Balgray, Lockerbie, " Magnate of Drumlanrig " (17,674).
2nd No. 144 Little, D. & J., Whitehill, Corrie, Lockerbie, " Barmark Adonis " (17,768).
3rd No. 143 Graham, Andrew, Auchengassel, Twynholm, " Camlachie 3rd of Stepford " (17,667).

CLASS 22. BULL, born on or after 1st December 1930.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 146	Biggar, Walter, Grange Farm, Dalbeattie, "Thomas of Scroggiehall" (18,421).
2nd	No. 150	Wilson, James, & Son, Tundergarth Mains, Lockerbie, "Ringleader 2nd of Tundergarth Mains (18,468).
3rd	No. 148	Forrester, Charles S., Skitby, Kirklinton, Carlisle, "Highbrow of Knockdon" (18,351).

CLASS 23. COW, in Milk, born before 1st December 1929.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 153	Paterson, R. Jardine, Balgray, Lockerbie, "Gratitude 2nd of Balgray" (33,025).
2nd	No. 151	Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, "Lady Constance 2nd of Castle Milk" (30,925).
3rd	No. 154	Wilson, James, & Son, Tundergarth Mains, Lockerbie, "Lady Alice 5th of Tundergarth Mains" (30,036).

CLASS 24. COW or HEIFER, born on or after 1st December 1929, and before 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 162	Little, D. & J., Whitehill, Corrie, Lockerbie, Heifer, "Culmark Queen 2nd" (33,616).
2nd	No. 157	Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, Heifer, "Fashion 3rd of Castle Milk" (33,727).
3rd	No. 166	Wilson, James, & Son, Tundergarth Mains, Lockerbie, Heifer, "Gaiety of Linnhead" (34,101).
4th	No. 156	Biggar, Walter, Grange Farm, Dalbeattie, Heifer, "Grange Charity 6th" (33,430).
V	No. 165	Paterson, R. Jardine, Balgray, Lockerbie, Heifer, "Matahari of Balgray" (33,744).
H	No. 159	Graham, Andrew, Auchengassel, Twynholm, Heifer, "Finnarts Gem."
C	No. 163	Moffat, W. Kennedy, Auchencheyne, Moniaive, Heifer, "Tibbie 2nd of Lochurr" (33,753).

CLASS 25. HEIFER, born on or after 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 168	Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, "Elite 7th of Castle Milk" (34,472).
2nd	No. 172	Moffat, W. Kennedy, Auchencheyne, Moniaive, "Tibbie 3rd of Lochurr" (34,501).
3rd	No. 175	Wilson, James, & Son, Tundergarth Mains, Lockerbie, "Nancy 55th of Tundergarth Mains" (34,861).
4th	No. 169	Forrester, Charles S., Skitby, Kirklinton, Carlisle, "Beauty of Skitby" (34,313).

BELTED GALLOWAY.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Belted Galloway Animal.

No. 180 Hamilton, General Sir Ian, 1 Hyde Park Gardens, London, "Allington Concrete" (467 B).

Reserve—No. 177 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Gartmore Robin" (707 B).

Knockbrex Challenge Cup, value £50, *for the best Belted Galloway Animal, "Extra Stock" being eligible to compete.* This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for.

No. 180 Hamilton, General Sir Ian, 1 Hyde Park Gardens, London, "Allington Concrete" (467 B).

CLASS 26. BULL, born before 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st No. 177 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Gartmore Robin" (707 B).
2nd No. 176 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Glenzier Watermark" (725 B).
3rd No. 178 Cross, Sir William, Bart., of Scatwell, Muir of Ord, "Scatwell Field Marshal" (923 B).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 180 Hamilton, General Sir Ian, 1 Hyde Park Gardens, London, "Allington Concrete" (467 B).

CLASS 27. BULL, born on or after 1st December 1930.—PREMIUMS, £10, £5, £3, and £2.

1st No. 183 Cross, Sir William, Bart., of Scatwell, Muir of Ord, "Scatwell Airman" (1009 B).
2nd No. 181 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Gartmore Madden" (1015 B).
3rd No. 182 Cross, Sir William, Bart., of Scatwell, Muir of Ord, "Knockbrex Ivan" (1007 B).

CLASS 28. COW or HEIFER, born before 1st December 1929, in Milk or in Calf; if in calf and not in Milk, to calve on or before 1st December of the year of the Show.—PREMIUMS, £10, £5, £3, and £2.

1st No. 188 Graham, Andrew, Auchengassel, Twynholm, Cow, "Mark Polly 2nd" (690 B).
2nd No. 184 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, Cow, "Gartmore Helen I." (1322 B).
3rd No. 185 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, Cow, "Gartmore Duchess VII." (1614 B).
4th No. 186 Cross, Sir William, Bart., of Scatwell, Muir of Ord, Cow, "Scatwell Cherry" (1106 B).
V No. 187 Cross, Sir William, Bart., of Scatwell, Muir of Ord, Cow, "Scatwell Lady Luck" (1656 B).

CLASS 29. HEIFER, born on or after 1st December 1929.—PREMIUMS, £10, £5, £3, and £2.

1st No. 190 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Gartmore Norah I." (2066 B).
2nd No. 189 Cayzer, Sir August, Bart., Gartmore House, Gartmore, Stirling, "Gartmore Doreen II." (2056 B).
3rd No. 193 Hamilton, General Sir Ian, 1 Hyde Park Gardens, London, "Lullenden Estelle II." (2118 B).
4th No. 192 Cross, Sir William, Bart., of Scatwell, Muir of Ord, "Scatwell Belinda" (2162 B).
V No. 191 Cross, Sir William, Bart., of Scatwell, Muir of Ord, "Scatwell Cherry Blossom" (2716 B).

HIGHLAND.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Highland Animal.

No. 199 Lees-Milne, Mrs Killundine, Drimnin, Argyll, "An Pròiseil Riabhach of Killundine" (3656).

Reserve—No. 194 Southesk, The Earl of, Kinnaird Castle, Brechin, "Merlin IV." (3640).

Perpetual Victory Challenge Cup, approximate value 50 guineas, *for the best animal in the Male Classes, "Extra Stock" being eligible to compete.* Given by the Highland Cattle Society of Scotland.

No. 199 Lees-Milne, Mrs, Killundine, Drimnin, Argyll, "An Pròiseil Riabhach of Killundine" (3656).

Breeder of best Bull in Classes 30 *to* 32—The Silver Medal.

No. 199 Lees-Milne, Mrs, Killundine, Drimnin, Argyll.

CLASS 30. BULL, born before 1930.—PREMIUMS, £15, £10, £5, and £3.

1st No. 194 Southesk, The Earl of, Kinnaird Castle, Brechin, "Merlin IV." (3640).
2nd No. 195 Walker, Francis W., of Leys, Leys Castle, Inverness, "Clais Dhearg" (3553).

CLASS 31. BULL, born in 1930.—PREMIUMS, £15, £10, £5, and £3.

1st No. 197 Southesk, The Earl of, Kinnaird Castle, Brechin, "Carrington VII." (3687).
2nd No. 196 Nelson, Thomas E., of Achnacloich, Connel, Argyll, "Culnadalloch a' Rithist of Achnacloich" (3638).

CLASS 32. BULL, born in 1931.—PREMIUMS, £12. £8, £4, and £2.

1st No. 199 Lees-Milne, Mrs, Killundine, Drimnin, Argyll, "An Pròiseil Riabhach of Killundine" (3656).
2nd No. 200 Lees-Milne, Mrs, Killundine, Drimnin, Argyll, "An Bàidheach of Killundine" (3657).
3rd No. 203 Nelson, Thomas E., of Achnacloich, Connel, Argyll, "An Ceatharnach of Achnacloich" (3639).
4th No. 202 Nelson, Thomas E., of Achnacloich, Connel, Argyll, "Ossian of Achnacloich" (3672).
V No. 205 Walker, Francis W., of Leys, Leys Castle, Inverness, "Duke II. of Flichity" (3651).
H No. 204 Thom, Allan G., of Canna, Isle of Canna, "Hyskeir of Canna" (3654).

Perpetual Victory Challenge Cup, approximate value 35 guineas, *for the best animal in the Female Classes, "Extra Stock" being eligible to compete.* Given by the Highland Cattle Society of Scotland.

No. 227 Southesk, The Earl of, Kinnaird Castle, Brechin, "Madam Corrina" (10,507).

CLASS 33. COW, of any age, with Calf at foot.—PREMIUMS, £12, £8, £4, and £2.

1st No. 212 Southesk, The Earl of, Kinnaird Castle, Brechin, "Maura II. of Southesk" (10,513).
2nd No. 209 Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "Luna of Errol" (9571).
3rd No. 211 Nelson, Thomas E., of Achnacloich, Connel, Argyll, "Lady Bhuidhe of Achnacloich" (10,388).
4th No. 207 Dunlop, Miss, of Shieldhill, Biggar, "Sidonia XVI." (10,187).
V No. 215 Walker, Francis W., of Leys, Leys Castle, Inverness, "Una IV. of Flichity" (10,443).
H No. 208 Home, The Earl of, K.T., Douglas Castle, Douglas, Lanarkshire, "An-t-Uramach Pride" (9996).
C No. 214 Walker, Francis W., of Leys, Leys Castle, Inverness, "Donnag Riabhach XX. of Atholl" (10,351).

CLASS 34. HEIFER, born in 1929.—PREMIUMS, £10, £5, £3, and £2.

1st No. 220 Nelson, Thomas E., of Achnacloich, Connel, Argyll, "Maireared VI. of Achnacloich" (10,390).
2nd No. 219 Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, "Almira III. of Errol" (10,264).
3rd No. 221 Southesk, The Earl of, Kinnaird Castle, Brechin, "Lady Mairi" (10,509).

4th	No. 216	Home, The Earl of, K.T., Douglas Castle, Douglas, Lanarkshire, " An-t-Uramach Morag " (10,395).
V	No. 217	Home, The Earl of, K.T., Douglas Castle, Douglas, Lanarkshire, " An-t-Uramach Tangy " (10,396).
H	No. 218	Home, The Earl of, K.T., Douglas Castle, Douglas, Lanarkshire, " Ban Righ Subhach " (10,397).

CLASS 35. HEIFER, born in 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 227	Southesk, The Earl of, Kinnaird Castle, Brechin, " Madam Corrina " (10,507).
2nd	No. 224	Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, " Sheila III. of Errol " (10,375).
3rd	No. 226	Nelson, Thomas E., of Achnacloich, Connel, Argyll, " Dossan X. of Achnacloich " (10,550).
4th	No. 225	Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, " Fuinary Princess III. of Errol " (10,376).
V	No. 223	Home, The Earl of, K.T., Douglas Castle, Douglas, Lanarkshire, " Sine An-t-Uramach " (10,543).
H	No. 222	Dunlop, Miss, of Shieldhill, Biggar, " Baravalla Orach of Quothquan " (10,341).

CLASS 36. HEIFER, born in 1931.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 233	Nelson, Thomas E., of Achnacloich, Connel, Argyll, " Sweetheart of Achnacloich " (10,392).
2nd	No. 229	Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, " Fiona Maid of Errol " (10,538).
3rd	No. 231	Morrison, John G., of Islay, Islay House, Bridgend, Islay, " Cuailean Ile " (10,547).
4th	No. 230	Maitland, Brig.-General J. D. Heriot, C.M.G., D.S.O., of Errol, Errol Park, Errol, " Sheila IV. of Errol" (10,536).
V	No. 232	Morrison, John G., of Islay, Islay House, Bridgend, Islay, " Bean Bhan Ile II." (10,546).
H	No. 234	Walker, Francis W., of Leys, Leys Castle, Inverness, " Mairi III. of Flichity " (10,441).

AYRSHIRE.

CONDITIONS.

1. To be eligible for competition in the Ayrshire Section cows must have an authenticated milk yield, and younger females (including cows which have not completed their first lactation) and bulls an authenticated milking pedigree, of a definite minimum amount.
2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3.8 per cent of butter fat :—
   - (*a*) Cows which have completed two or more lactations—700 gallons.
   - (*b*) Cows which have completed only one lactation—600 gallons.
   - (*c*) Younger females and bulls—an authenticated milking pedigree for dam and dam of sire on a similar basis.
3. In the case of cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

PRINCE OF WALES CHAMPION GOLD MEDAL
for best Ayrshire Animal.

No. 237 M'Alister, James, Meikle Kilmory, Rothesay, "Meikle Kilmory Rosary" (91,252).

Reserve—No. 246 M'Alister, Robert, Mid Ascog, Rothesay, "Mid Ascog Pearl Royal 5th" (27,884).

Cowhill Champion Cup, approximate value £30, *for best Animal of the Ayrshire breed, entered with a number in the Herd-Book.* Presented by the late Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

No. 237 M'Alister, James, Meikle Kilmory, Rothesay, "Meikle Kilmory Rosary" (91,252).

Special Prizes amounting to £14 *for Cows from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes* 37 *to* 39, of which £10 is given by Messrs Brown & Polson, Limited, Paisley.

1st No. 245 Corbett, The Hon. G., Rowallan, Kilmarnock, "Rowallan Primrose" (95,086).
2nd No. 250 Ardgowan Estates, Limited, Ardgowan, Inverkip, "Ardgowan Grisette" (33,256).
3rd No. 249 Tullibody Land Company, Limited, Ditch Farm, Cambus, Clackmannanshire, "Braehead Alexandra" (3508).

Special Prize of £10 *for the best Female Animal of the Ayrshire Breed entered with a number in the Ayrshire Cattle Herd-Book prior to 1st June* 1932. Given by the Ayrshire Cattle Herd-Book Society.

No. 237 M'Alister, James, Meikle Kilmory, Rothesay, "Meikle Kilmory Rosary" (91,252).

CLASS 37. COW, in Milk, born before 1929.—PREMIUMS, £12, £8, and £4.

1st No. 237 M'Alister, James, Meikle Kilmory, Rothesay, "Meikle Kilmory Rosary" (91,252).
2nd No. 239 Marr, A. & J., Blackbyres, Maybole, "Blackbyres Nancy 3rd" (95,473).
3rd No. 243 Barr, Thomas, Hobsland, Monkton, "Hobsland Lassie 3rd" (16,579).

CLASS 38. COW, in Milk, born on or after 1st January 1929.—PREMIUMS, £10, £7, and £3.

1st No. 242 Mackay, Robert, Bruchag, Rothesay, "Bruchag Flowergirl" (30,664).
2nd No. 250 Ardgowan Estates, Limited, Ardgowan, Inverkip, "Ardgowan Grisette" (33,256).

CLASS 39. COW, of any age, in Calf, and due to calve before 1st December of the year of the Show.—PREMIUMS, £10, £7, and £3.

1st	No. 246	M'Alister, Robert, Mid Ascog, Rothesay, " Mid Ascog Pearl Royal 5th " (27,884).
2nd	No. 247	Marr, A. & J., Blackbyres, Maybole, " Blackbyres Lilian White " (88,910).
3rd	No. 248	Marr, A. & J., Blackbyres, Maybole, " Blackbyres Princess 2nd " (7061).
V	No. 245	Corbett, The Hon. G., Rowallan, Kilmarnock, " Rowallan Primrose " (95,086).
H	No. 249	Tullibody Land Company, Limited, Ditch Farm, Cambus, Clackmannanshire, " Braehead Alexandra " (3508).

CLASS 40. HEIFER, born on or after 1st June 1929, in Calf, and due to calve before 1st December of the year of the Show.—PREMIUMS, £10, £7, and £3.

1st	No. 252	Clark, John, Dunrod Farm, Inverkip, " Dunrod Lady Gray 2nd " (33,172).
2nd	No. 251	Barr, Thomas, Hobsland, Monkton, " Hobsland Jean 8th " (28,704).
3rd	No. 253	Corbett, The Hon. G., Rowallan, Kilmarnock, " Rowallan Tilda 9th " (31,835).

CLASS 41. HEIFER, born in 1930.—PREMIUMS, £10, £5, and £3.

1st	No. 259	Graham, Samuel, Horton Hall, Small Dole, Sussex, " Hobsland Nancy 23rd " (28,714).
2nd	No. 256	Buchanan, Andrew, Westerton Farm, Kippen, " Westerton Gay Lady " (36,170).
3rd	No. 257	Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife, " Cults Marigold " (31,677).
V	No. 261	Montgomerie, Adam W., Lessnessock, Ochiltree, " Drongan Mains Rosabelle."
H	No. 258	Corbett, The Hon. G., Rowallan, Kilmarnock, " Rowallan Tilda 10th " (31,836).
C	No. 255	Ardgowan Estates, Limited, Ardgowan, Inverkip, " Ardgowan Godiva " (33,251).

CLASS 42. HEIFER, born in 1931.—PREMIUMS, £8, £5, and £3.

1st	No. 265	Logan, John, Meadowbank, Mauchline, " Bargenoch Silver Treasure."
2nd	No. 267	Montgomerie, Adam W., Lessnessock, Ochiltree, " Lessnessock Clover 2nd " (35,175).
3rd	No. 264	Houldsworth, Colonel W. T. R., of Threave, Kirkmichael, Ayrshire, " Threave Rosemary 2nd " (38,495).
V	No. 263	Corbett, The Hon. G., Rowallan, Kilmarnock, " Rowallan Jean 4th " (36,904).
H	No. 262	Ardgowan Estates, Limited, Ardgowan, Inverkip, " Ardgowan Glauca " (35,464).

Breeder of best Bull of any age in Classes 43 *to* 45—The Silver Medal.

No. 268 Barr, Thomas, Hobsland, Monkton.

Special Prize of £10 *for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book prior to 1st June* 1932. Given by the Ayrshire Cattle Herd-Book Society.

No. 268 Corbett, The Hon. G., Rowallan, Kilmarnock, " Hobsland Satisfaction " (28,909).

CLASS 43. BULL, born before 1930.—PREMIUMS, £12, £8, and £4.

1st No. 268 Corbett, The Hon. G., Rowallan, Kilmarnock, " Hobsland Satisfaction " (28,909).
2nd No. 269 Montgomerie, Adam W., Lessnessock, Ochiltree, " Bargenoch Blue Ribbon."
3rd No. 270 Tullibody Land Company, Limited, Ditch Farm, Cambus, Clackmannanshire, " Bankend Commodore " (26,507).

CLASS 44. BULL, born in 1930.—PREMIUMS, £10, £7, and £3.

1st No. 272 Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife, " Cults Douglas " (30,047).
2nd No. 275 Wilson, Andrew, Finlayston, Ochiltree, " Hobsland Graduate " (29,952).
3rd No. 274 Howie, James, & Sons, Muirside, Holywood, Dumfries, " Stannock British King " (30,316).

CLASS 45. BULL, born in 1931.—PREMIUMS, £8, £5, and £3.

1st No. 278 Howie, James, & Sons, Muirside, Holywood, Dumfries, " Hobsland Invincible " (30,980).
2nd No. 277 Houldsworth, Colonel W. T. R., of Threave, Kirkmichael, Ayrshire, " South Craig Ambition " (31,409).

BRITISH FRIESIAN.

PRINCE OF WALES CHAMPION GOLD MEDAL for best British Friesian Animal.

No. 298 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Becula 5th " (145,894).

Reserve—No. 322 M'Ilchere, Malcolm, Cartside Farm, Thorntonhall, " Kintyre Thorn " (36,047).

The MacRobert Champion Silver Bell, value 50 Guineas, *for the best animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Society's Herd-Book, " Extra Stock " being eligible to compete.* Given by Lady Rachel Workman MacRobert, Douneside, Tarland.

No. 298 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Becula 5th " (145,894).

Silver Challenge Cup, value 50 Guineas, *for the best Group of three animals, "Extra Stock" eligible to compete.* Given by the British Friesian Cattle Society.

No. 298 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Becula 5th" (145,894).
No. 307 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Lala 2nd" (155,742).
No. 333 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Morris."

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Female exhibited.*

No. 298 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Becula 5th" (145,894).

CLASS 46. COW, in Milk, born in or before 1928.—PREMIUMS, £12, £8, £4, and £2.

1st No. 280 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Conniemijn" (95,526).
2nd No. 282 Christison, John, Crossveggate, Milngavie, "Findlay Fluky" (71,214).

CLASS 47. COW, in Calf, and not in Milk, born in or before 1928.—PREMIUMS, £10, £5, £3, and £2.

1st No. 285 MacLennan, Duncan Alexander, Balmachree, Inverness, "Balmachree Fanciful" (101,006).
2nd No. 286 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Beryl 2nd" (103,990) R.M.
3rd No. 283 Gardner, William, Springfield, Linlithgow, "Beechwood Keepsake" (112,790).
4th No. 284 Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, "Tyneside Joukje P.I." (111,114).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 290 MacLennan, Duncan Alexander, Balmachree, Inverness, "Balmachree Amelia" (50,400).

CLASS 48. COW, in Milk, born in 1929 or 1930.—PREMIUMS, £10, £5, £3, and £2.

1st No. 292 Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, "Glentanar Karella P.I." (137,060).

CLASS 49. HEIFER, born in 1930.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 298	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Becula 5th " (145,894).
2nd	No. 297	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Albert's Minnie " (145,890).
3rd	No. 295	Christison, John, Crossveggate, Milngavie, " Crossveggate Pel Ina " (145,562).
4th	No. 294	Christison, John, Crossveggate, Milngavie, " Crossveggate Pel Akke " (145,556).
V	No. 299	Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, " Abden Alma " (142,838).
H	No. 300	Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, " Abden Akrina " (142,836).
C	No. 296	Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, " Glentanar Jouba P.I." (146,944).

CLASS 50. HEIFER, born in 1931, before 1st July.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 307	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Lala 2nd " (155,742).
2nd	No. 302	Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, " Glentanar Landerfly " (156,784).
3rd	No. 310	Ross, Errington, Castleheather, Inverness, " Castleheather Duchess " (154,414).
4th	No. 303	Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, " Glentanar Celanda " (156,778).
V	No. 304	Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, " Glentanar Barionette " (156,770).
H	No. 308	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Bertus Minna 4th " (155,736).
C	No. 311	Ross, Errington, Castleheather, Inverness, " Castleheather Damosel " (154,412).

CLASS 51. HEIFER, born in 1931, on or after 1st July.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 312	Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, " Glentanar Balaurie " (156,766).
2nd	No. 316	MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, " Douneside Aster 3rd " (155,730).
3rd	No. 314	Gordon, D. J., Cullaird, Inverness, " Cullaird Rijper Bluebell " (155,364).
4th	No. 315	Johnston, H. G., Culduthel, Inverness, " Culduthel Nettie " (155,362).

Breeder of best Bull of any age in Classes 52 *to* 54—The Silver Medal.

No. 322 M'Ilchere, Malcolm, Cartside Farm, Thorntonhall.

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Male exhibited.*

No. 322 M'Ilchere, Malcolm, Cartside Farm, Thorntonhall, "Kintyre Thorn" (36,047).

CLASS 52. BULL, born in or before 1929.—PREMIUMS, £12, £8, £4, and £2.

1st No. 322 M'Ilchere, Malcolm, Cartside Farm, Thorntonhall, "Kintyre Thorn" (36,047).
2nd No. 320 Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, "Hales Burika P.I." (35,865).
3rd No. 324 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Masterpiece" (19,835).
4th No. 325 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Branchal Ver Klaske" (32,343).
V No. 323 MacLennan, Duncan Alexander, Balmachree, Inverness, "Balmachree Hero" (33,767).
H No. 319 Gardner, William, Springfield, Linlithgow, "Jawcraig Prince" (36,009).
C No. 321 Innes, James C., Dunscroft, Gartly, "Glentanar Lothander" (35,807).

EXTRA STOCK.

The following was awarded the Silver Medal:—

No. 326 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Seaton Cesar P.I." (29,841).

CLASS 53. BULL, born in 1930.—PREMIUMS, £10, £5, £3, and £2.

1st No. 328 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Douneside Benefactor 2nd" (37,249).
2nd No. 327 Collie, George, Hillbrae, Bourtie, Inverurie, "Hillbrae Footprint" (37,559).

CLASS 54. BULL, born in 1931.—PREMIUMS, £10, £5, £3, and £2.

1st No. 333 MacRobert, Trustees of Sir Alasdair W., Bart., Douneside Home Farm, Tarland, Aboyne, "Douneside Morris."
2nd No. 330 Gordon, D. J., Cullaird, Inverness, "Douneside Eureka 2nd."
3rd No. 329 Glentanar, Lord, Home Farm, Glen Tanar, Aboyne, "Glentanar Subarque."
4th No. 331 Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Lord Cesar P.I."
V No. 334 Pathhead & Sinclairtown Reform Co-operative Society, Limited, 102 Commercial Street, Kirkcaldy, "Abden Robin."
H No. 332 MacLennan, Duncan Alexander, Balmachree, Inverness, "Balmachree Kismet."

RED POLL.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Red Poll Animal.

No. 340 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Prim " (45,519).

Reserve—No. 347 Robertson, Major W. B., M.C., Colton, Dunfermline, " Colton Hector " (15,655).

Kinmount Challenge Cup, value about £50, *for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, " Extra Stock " being eligible to compete.* This Cup was presented to the Society by the late Lieut.-Colonel Charles Brook of Kinmount, Annan.

No. 340 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Prim " (45,519).

CLASS 55. COW, in Milk or in Calf, born before 1930.—PREMIUMS, £10, £5, and £3

1st No. 335 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Daisy 2nd " (39,683).
2nd No. 336 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Poley " (41,625).
3rd No. 337 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Molly 4th " (43,581).

CLASS 56. HEIFER, born in 1930.—PREMIUMS, £10, £5, and £3.

1st No. 340 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Prim " (45,519).
2nd No. 341 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Bluebell " (45,514).
3rd No. 342 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Cherry 5th " (45,517).

CLASS 57. HEIFER, born in 1931.—PREMIUMS, £10, £5, and £3.

1st No. 344 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Pansy 2nd " (47,474).
2nd No. 345 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Model " (47,472).
3rd No. 346 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Sprite 3rd " (47,476).
V No. 343 Tinker, Charley, Kilmartin, Inverness, " Kilmartin Red Berry " (47,475).

CLASS 58. BULL, born in or before 1930.—Premiums, £10, £5, and £3.

1st	No. 347	Robertson, Major W. B., M.C., Colton, Dunfermline, "Colton Hector" (15,655).
2nd	No. 348	Tinker, Charley, Kilmartin, Inverness, "Kilmartin Crimson" (15,360).
3rd	No. 349	Tinker, Charley, Kilmartin, Inverness, "Kilmartin Redcoat 2nd" (15,758).

CLASS 59. BULL, born in 1931.—Premiums, £10, £5, and £3.

(No entry.)

FAT CATTLE.

PRINCE OF WALES CHAMPION SILVER MEDAL for best Fat Animal.

No. 352 Paterson, R. Jardine, Balgray, Lockerbie (Galloway), "Xmas Gift."

Reserve—No. 353 Walker, Robert W., Portlethen, Aberdeen (Aberdeen-Angus Bull—Cross Dairy Cow), "Theodore."

CLASS 60. BULLOCK, any pure breed or cross, born on or after 1st December 1929 and before 1st December 1930.—Premiums, £7 and £3.

1st	No. 352	Paterson, R. Jardine, Balgray, Lockerbie (Galloway), "Xmas Gift."
2nd	No. 353	Walker, Robert W., Portlethen, Aberdeen (Aberdeen-Angus Bull—Cross Dairy Cow), "Theodore."
V	No. 351	Fraser, Charles, of Gollanfield, Inverness (Aberdeen-Angus Bull—Cross-bred Cow).
H	No. 350	Fraser, Charles, of Gollanfield, Inverness (Aberdeen-Angus Bull—Cross-bred Cow).

CLASS 61. BULLOCK, any pure breed or cross, born on or after 1st December 1930.—Premiums, £7 and £3.

1st	No. 354	Booth, James D., Dens, Peterhead (Shorthorn), "Baron's Pride."
2nd	No. 355	Grant, John A., Wester Rarichie, Nigg Station, Ross-shire (Aberdeen-Angus Bull—Cross Cow), "Jock."
V	No. 356	Houldsworth, J. Hamilton, Dallas Lodge, Forres (Aberdeen-Angus), "Black Boy 2nd of Dallas" (76,192).
H	No. 357	Law, Messrs, Mains of Sanquhar, Forres (Shorthorn), "Andrew."

CLASS 62. Pair of CROSS-BRED BULLOCKS or pair of CROSS-BRED HEIFERS, any age.—Premiums, £7 and £3.

1st	No. 358	M'Callum, Peter W., Lemlair, Dingwall, Heifers (Shorthorn Bull—Aberdeen-Angus Cow).

DAIRY COW.

PRINCE OF WALES CHAMPION SILVER MEDAL
for best Dairy Cow in Class 63.

CLASS 63. DAIRY COW, in Milk, any pure breed or cross, and of any age. Pure Bred Dairy Cows, for which Classes are otherwise provided, not eligible.—PREMIUMS, £10, £7, and £3.

(Cancelled owing to insufficient entries.)

CLASS 64. DAIRY COW, in Milk, drawn from Classes 28, 37, 38, 46, 48, 55, and 63.

Perpetual Gold Challenge Cup, presented by the Corporation of the City of Edinburgh to commemorate the Hundredth Show of the Highland and Agricultural Society of Scotland. *The Cup is offered this year for the best Dairy Cow, in Milk, entered in Classes* 28, 37, 38, 46, 48, 55, *and* 63. *" Extra Stock " eligible to compete.*

No. 237 M'Alister, James, Meikle Kilmory, Rothesay, " Meikle Kilmory Rosary " (91,252).

A Gold Medal, value 10 Guineas, given by Dr T. G. Nasmyth, Edinburgh, *to the winner as a memento of his winning the Cup.*

No. 237 M'Alister, James, Meikle Kilmory, Rothesay, " Meikle Kilmory Rosary " (91,252).

HORSES

CLYDESDALE STALLION AND COLT.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Stallion or Colt.

No. 399 Templeton, T. & M., Sandyknowe, Kelso.

Reserve—No. 393 MacLaren, A. & T., Drummore, Doune, " Doune Castle."

Cawdor Challenge Cup, value 50 Guineas, *for best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book.* Given by the Clydesdale Horse Society.

No. 399 Templeton, T. & M., Sandyknowe, Kelso.

Breeder of best Male Animal of any age in Classes 65 *to* 68—The Silver Medal

No. 399 Wilson, Robert, Kirkcolm, Ballantrae.

CLASS 65. STALLION, born before 1929.—PREMIUMS £20, £15, £10, and £4.

1st No. 362 Templeton, T. & M., Sandyknowe, Kelso, " Benefaction " (21,712).
2nd No. 360 Adams, David, Auchencraig, Dumbarton, " Robertprint " (21,122).

CLASS 66. ENTIRE COLT, born in 1929.—PREMIUMS £20, £15, £10, and £4.

1st No. 363 Adams, David, Auchencraig, Dumbarton, " Dunduff Knight " (21,866).
2nd No. 369 Templeton, T. & M., Sandyknowe, Kelso, " Benedictine " (21,836).
3rd No. 365 Clark, Allan, Woodbank, Windygates, " Woodbank Master " (21,937).
4th No. 364 Campbell, G. & J., Gartness, Balfron, " Deposit " (21,986).

CLASS 67. ENTIRE COLT, born in 1930.—PREMIUMS, £20, £15, £10, and £4.

1st No. 384 Templeton, T. & M., Sandyknowe, Kelso, " Venetian."
2nd No. 386 Templeton, T. & M., Sandyknowe, Kelso, " Benevolence " (21,952).
3rd No. 372 Armstrong, J. A., The Beeches, Tarraby, Carlisle, " Virol's Heir " (22,055).
4th No. 379 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Winsome Lad " (21,977).

V No. 385 Templeton, T. & M., Sandyknowe, Kelso, " The Factor " (22,053).
H No. 376 Clark, James, Windlaw, Carmunnock, " Windlaw Topsman " (22,056).
C No. 381 Reith, Miss E. M., Kennerty Farm, Peterculter, " Resource " (22,036).
C No. 375 Clark, Allan, Woodbank, Windygates, " Woodbank Peer " (22,059).
C No. 371 Adams, David, Auchencraig, Dumbarton, " Full Cry " (21,995).

CLASS 68. ENTIRE COLT, born in 1931.—PREMIUMS, £15, £9, £6, and £4.

1st No. 399 Templeton, T. & M., Sandyknowe, Kelso.
2nd No. 393 MacLaren, A. & T., Drummore, Doune, " Doune Castle."
3rd No. 389 Clark, Alexander, Strathore, Thornton, Fife, " Strathore Majestic."
4th No. 392 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Welcome Guest."
V No. 388 Armstrong, J. A., The Beeches, Tarraby, Carlisle, " Gregalach."
H No. 396 Reith, Miss E. M., Kennerty Farm, Peterculter, " Reprint."
C No. 400 Templeton, T. & M., Sandyknowe, Kelso.

CLYDESDALE GELDING.

Got by a Registered Clydesdale Stallion.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Gelding.

No. 402 Clark, James, Windlaw, Carmunnock, " Jim."
Reserve—No. 409 Kerr, William, Bell Mount, Penrith, " Joe."

The Meiklem Gold Challenge Cup, valued 110 Guineas, *for best Clydesdale Gelding, " Extra Stock " eligible to compete.* Given by Mr William Meiklem, Bennochy Park, Kirkcaldy.

No. 402 Clark, James, Windlaw, Carmunnock, " Jim."
Reserve—No. 409 Kerr, William, Bell Mount, Penrith, " Joe."

CLASS 69. GELDING, born before 1929.—PREMIUMS, £15, £9, £6, and £4.

1st No. 402 Clark, James, Windlaw, Carmunnock, " Jim."
2nd No. 403 Gardner, William, Springfield, Linlithgow, " Spring."

CLASS 70. GELDING, born in 1929.—PREMIUMS, £15, £9, £6, and £4.

1st No. 409 Kerr, William, Bell Mount, Penrith, " Joe."
2nd No. 408 Greig, Messrs, Housenrigg, Aspatria, Cumberland, " The Yett."
3rd No. 410 Letham, John, Manor-Neuk, Blairlogie, Stirling, " Lochmalony."
4th No. 405 Brown, James P., Dipple, Fochabers, " John o' Groat."
V No. 411 Logan, Mrs J. F., Suddie, Munlochy, " Pearlie King."
H No. 412 Rhind, Alexander, Hatton, Kinloss, Forres, " Billy."

CLASS 71. GELDING, born in 1930.—PREMIUMS, £15, £9, £6, and £4.

1st No. 417 Wilson, William, Blackbyres, Barrhead, " Ben."
2nd No. 416 Park, Robert, Brunstane, Portobello, " Sandy."
3rd No. 414 Kerr, John, Shearington, Caerlaverock, Dumfries, " Joe Again."
4th No. 415 Logan, Mrs J. F., Suddie, Munlochy, " Sport."

CLASS 72. GELDING, born in 1931.—PREMIUMS, £12, £8, £4, and £2.

1st No. 418 Brown, James P., Dipple, Fochabers, " Spey."
2nd No. 420 Macdonald, Mrs J. H., of Torbreck, Inverness, " Frank."

CLYDESDALE MARE AND FILLY.

PRESIDENT'S CHAMPION MEDAL for best Clydesdale Mare or Filly.

No. 433 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, " Onoway."

Reserve—No. 439 Beck, G. M., The Lane, Ravenstonedale, Westmorland, Filly, " Lane Lucky Girl."

Cawdor Challenge Cup, value 50 Guineas, *for best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book.* Given by the Clydesdale Horse Society.

No. 439 Beck, G. M., The Lane, Ravenstonedale, Westmorland, Filly, " Lane Lucky Girl."

CLASS 73. MARE, of any age, with Foal at foot, or due to foal before 31st July 1932.—PREMIUMS, £20, £12, £7, and £4.

1st No. 427 Park, Misses J. and M., Brunstane, Portobello, " Vanessa " (56,954).
2nd No. 426 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, " Fyvie Primrose."
3rd No. 425 Mundell, C. W., Delny, Ross-shire, " Ardmore Cissie " (56,467).
4th No. 422 Grant & Young, Arradoul Mains, Buckie, " Sweetheart."
V No. 423 Jack, David, Middleton, Balbeggie, Perth, " Middleton Moss Rose " (57,618).
H No. 421 Cormack, Alexander, Shandwick Mains, Nigg Station, Ross-shire, " Lily of Shandwick."

CLASS 74. YELD MARE, born before 1929.—PREMIUMS, £15, £9, £6, and £4.

1st No. 433 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, " Onoway."
2nd No. 429 Adams, David, Auchencraig, Dumbarton, " Powerful Link " (58,789).
3rd No. 434 Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, " Owaissa."

4th	No. 430	Beck, G. M., The Lane, Ravenstonedale, Westmorland, " Lane Snowflake."
V	No. 431	Law, William W., Sunside, Rayne, Meikle Wartle, " Sunside Maggie " (58,990).
H	No. 436	Ross, Errington, Castleheather, Inverness, " Castleheather Nugget."
C	No. 432	Miller, William S., Jun., Balmanno Castle, Bridge of Earn, " Balmanno Julia " (57,219).

CLASS 75. YELD MARE or FILLY, born in 1929.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 439	Beck, G. M., The Lane, Ravenstonedale, Westmorland, Filly, " Lane Lucky Girl."
2nd	No. 441	Lamont, John, Ardyne, Toward, Argyll, Filly, " Ardyne Smiling Duchess."
3rd	No. 440	Kerr, J. E., of Harviestoun, Dollar, Filly, " Harviestoun Nora."
4th	No. 444	Rhind, Alexander, Hatton, Kinloss, Forres, Filly, " Ellia."
V	No. 443	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, Filly, " Benefactoress."
H	No. 442	Miller, David, Upper Milton, Wick, Filly, " Chosen Girl."

William Taylor Memorial Prize of £10 and Certificate *to the breeder of the best Clydesdale Filly entered in Classes* 76 *and* 77. Given by William Taylor Memorial Committee.

No. 458 Matthews, A. B., The late, Orchardton, Garlieston.

CLASS 76. FILLY, born in 1930.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 448	Clark, Alexander, Strathore, Thornton, Fife, " Ida."
2nd	No. 454	Robertson, Thomas, Townhead Farm, Annbank, Ayr, " Balgreen Charm."
3rd	No. 445	Armstrong, J. A., The Beeches, Tarraby, Carlisle, " Vera."
4th	No. 449	Elliot, Charles S., Charterhouse, Kelso, " Harmonica."
V	No. 452	Murdoch, Henry, Balgreen, Hollybush, " Balgreen Gay Lass."
H	No. 453	Park, Robert, Brunstane, Portobello, " Brunstane Evergreen."
C	No. 446	Beaton, James & Frank, Mains of Glack, Pitcaple, " Glack Winsome."
C	No. 447	Beck, G. M., The Lane, Ravenstonedale, Westmorland, " Lane Talking Picture."

CLASS 77. FILLY, born in 1931.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 458	Dalziel, Lord, P.C., Borgue House, Kirkcudbright, " Belle o' Borgue."
2nd	No. 460	Kerr, J. E., of Harviestoun, Dollar, " Harviestoun Nina."
3rd	No. 463	Lamont, John, Ardyne, Toward, Argyll, " Bonnie Dunoon."
4th	No. 464	Macintyre, Robert S., Bridgend, Islay, " Ile Dhonn."
V	No. 457	Beaton, James & Frank, Mains of Glack, Pitcaple, " Glack Sunray."
H	No. 470	Sleigh, John P., of St John's Wells, Fyvie, " Linda."
C	No. 466	Murdoch, Henry, Balgreen, Hollybush, " Balgreen Resemblance."

CLYDESDALE FOAL.

CLASS 78. FOAL, COLT, or FILLY, born on or after 1st January 1932.—PREMIUMS, £5, £3, £2, and £1.

1st	No. 480	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 475	Grant & Young, Arradoul Mains, Buckie.
3rd	No. 479	Park, Misses J. and M., Brunstane, Portobello.
4th	No. 478	Murdoch, Alexander, East Hallside, Hallside, Lanarkshire.
V	No. 474	Cormack, Alexander, Shandwick Mains, Nigg Station, Ross-shire.
C	No. 477	Mundell, C. W., Delny, Ross-shire.

HUNTERS.

PRESIDENT'S CHAMPION MEDAL for best Hunter.

No. 489 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, Filly, " Harmony VII." (7649).

Reserve—No. 483 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Tiroran, Isle of Mull, Gelding, " Ross of Mull."

Dumfries Centenary Silver Challenge Cup, value £100, *for best Hunter, " Extra Stock " not eligible to compete.* Presented by members of the Dumfriesshire Hunt to commemorate the centenary of the Highland Society's first Show at Dumfries in 1830.

No. 489 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, Filly, " Harmony VII." (7649).

Special Prizes for Foals shown with their dams in Class 79—£3, £2, and £1.

1st No. 481 Webster, Miss E. Ruth, Ashbrook, Arbroath.

CLASS 79. HUNTER BROOD MARE, with Foal at foot or due to foal before 31st July 1932.—PREMIUMS, £15, £7, and £3.

1st No. 481 Webster, Miss E. Ruth, Ashbrook, Arbroath, " Star of Bethlehem."

Best Hunter Filly, entered in Classes 80 *to* 82, *registered with a number in the Hunter Stud-Book, or the entry tendered within one month of the award*—Champion Gold Medal. Given by the Hunters' Improvement and National Light Horse Breeding Society.

No. 489 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, Filly, " Harmony VII." (7649).

Reserve—No. 486 Paton, Alastair W., Pawston, Mindrum, Northumberland, Filly, " The Nun VI." (7292).

CLASS 80. YELD MARE, FILLY, or GELDING, born in 1929—*in hand.*—PREMIUMS, £10, £5, and £3.

1st No. 483 Cheape, Brig.-General R., C.M.G., D.S.O., M.C., of Tiroran, Isle of Mull, Gelding, " Ross of Mull."
2nd No. 486 Paton, Alastair W., Pawston, Mindrum, Northumberland, Filly, " The Nun VI." (7292).
3rd No. 482 Buchan, Miss M. S. F., Manar, Inverurie, Gelding, " First Flight."
V No. 485 Duguid, Miss H. M., Manar, Inverurie, Filly, " Fidelity " (7343).
H No. 484 Drummond, Mrs, of Megginch, Megginch Castle, Errol, Perthshire, Filly, " Dazzle."

CLASS 81. YELD MARE, FILLY, or GELDING, born in 1930—*in hand.*—PREMIUMS, £10, £5, and £3.

1st No. 489 Buchanan-Jardine, Sir John William, of Castlemilk, Bart., Castle Milk, Lockerbie, Filly, " Harmony VII." (7649).
2nd No. 491 Currie, Miss Thomson, Clatto, Cupar, Fife, Gelding, " Mark Anthony."
3rd No. 493 Jackson, Mrs H., Balnacraig, Pitlochry, Filly, " Pavlova."
V No. 492 Duguid, Miss E. F. M., Manar, Inverurie, Gelding, " Ardross."

CLASS 82. FILLY, COLT, or GELDING, born in 1931—*in hand.*—PREMIUMS, £10, £5, and £3.

1st No. 497 Currie, Miss Thomson, Clatto, Cupar, Fife, Colt, " Active."
2nd No. 499 Sanderson, J. Martin, Linthill, Melrose, Filly, " Mystery."
3rd No. 496 Currie, Miss Thomson, Clatto, Cupar, Fife, Filly, " Merry Ann."
V No. 498 Drummond, Mrs, of Megginch, Megginch Castle, Errol, Perthshire, Colt, " Ardroe."
H No. 495 Baillie, Miss Lilian, Loch Loy, Nairn, Filly, " Ladybird."

HIGHLAND PONY AND WESTERN ISLAND PONY.

PRESIDENT'S CHAMPION MEDAL for best Highland or Western Island Pony.

No. 513 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, " Isle of Arran Bonnie Jean " (4408).

Reserve—No. 519 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, " Nancy of Kinmonth " (6107).

Fife and Kinross Perpetual Gold Challenge Cup, value £200, *for best Highland or Western Island Pony, " Extra Stock " being eligible to compete.* This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912.

No. 513 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, " Isle of Arran Bonnie Jean " (4408).

Reserve—No. 519 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, " Nancy of Kinmonth " (6107).

Special Prize of £10 given by Highland Pony Society *for best Male Animal not exceeding* 14.2 *Hands, entered in Classes* 83, 84, *and* 87, *"Extra Stock" not eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 502 Wills, Captain A. S., Applecross House, Applecross, Ross-shire, "Aber-Crossan" (1717).

CLASS 83. STALLION, born before 1930, over 14 Hands and not exceeding 14.2 Hands.—PREMIUMS, £8, £4, and £2.

1st No. 501 Honeyman, R. Wemyss, Derculich, Strathtay, "Beaufort of Glenfarg" (1536).

CLASS 84. STALLION, born before 1930, not exceeding 14 Hands. —PREMIUMS, £8, £4, and £2.

1st No. 502 Wills, Captain A. S., Applecross House, Applecross, Ross-shire, "Aber-Crossan" (1717).

Special Prize of £10 given by Highland Pony Society *for best Female Animal not exceeding* 14.2 *Hands, entered in Classes* 85, 86, *and* 88, *"Extra Stock" not eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 519 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, "Nancy of Kinmonth" (6107).

CLASS 85. MARE, born before 1930, over 14 Hands and not exceeding 14.2 Hands, Yeld or with Foal at foot.—PREMIUMS, £8, £4, and £2.

1st No. 503 Cameron, John A., Glenfintaig, Corstorphine, Midlothian, "Kilmaluag Peggy" (6235).
2nd No. 504 Campbell, Colin, Glenshiel, Kyle of Lochalsh, "Silver Spray."

CLASS 86. MARE, born before 1930, not exceeding 14 Hands, Yeld or with Foal at foot.—PREMIUMS, £8, £4, and £2.

1st No. 509 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, "Ara of Rosehaugh" (5410).
2nd No. 510 Macbeth, W. Gilchrist, of Dunira, Comrie, "White Star of Dunira" (6057).
3rd No. 506 Honeyman, Mrs Gertrude C., Derculich, Strathtay, "Grisel" (6169).
V No. 508 Campbell, Colin, Glenshiel, Kyle of Lochalsh, "Gold Dust of Glenshiel."
H No. 505 Honeyman, Mrs Gertrude C., Derculich, Strathtay, "Glaster" (6170).
C No. 511 Mackenzie, Miss Kathleen, Glenkyllachy, Tomatin, "Starlight II. of Farr" (6068).

EXTRA STOCK.

The following were awarded Silver Medals:—

No. 512 Macbeth, W. Gilchrist, of Dunira, Comrie, "Queenie IX." (6056).
No. 513 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, "Isle of Arran Bonnie Jean" (4408).

CLASS 87. ENTIRE COLT, born on or after 1st January 1930, not exceeding 14.2 Hands.—PREMIUMS, £6, £4, and £2.

1st No. 514 Campbell, Colin, Glenshiel, Kyle of Lochalsh, " Gaisgeach Odhar."

CLASS 88. FILLY, born on or after 1st January 1930, not exceeding 14.2 Hands.—PREMIUMS, £6, £4, and £2.

1st No. 519 Wright, Major D. G. Moncrieff, M.C., of Kinmonth, Bridge of Earn, " Nancy of Kinmonth " (6107).
2nd No. 515 Elford, Miss Lilian, Rosehaugh, Avoch, Ross-shire, " Lady Sally."
3rd No. 518 Mackenzie, Miss Kathleen, Glenkyllachy, Tomatin, " Strianach of Farr " (6069).
V No. 517 Mackenzie, Major D. W. A. D., D.S.O., of Farr, House of Farr, Inverness, " Ban Bhuachaille of Farr " (6087).
H No. 516 Macbeth, W. Gilchrist, of Dunira, Comrie, " Creag Odhar " (6180).

SHETLAND PONY.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Shetland Pony.

No. 522 Mungall, William, of Transy, Dunfermline, " Kitmagur of Penniwells " (1246).

Reserve—No. 530 Mungall, William, of Transy, Dunfermline, " Helsa of Transy."

Best Group of Shetland Ponies, drawn from the ordinary Classes, consisting of one male and two females—£10. Given by " Four Lovers of the Breed," per Mr W. Mungall of Transy.

No. 522 Mungall, William, of Transy, Dunfermline, " Kitmagur of Penniwells " (1246).
No. 530 Mungall, William, of Transy, Dunfermline, " Helsa of Transy."
No. 536 Mungall, William, of Transy, Dunfermline, " Sunbeam of Transy " (4353).

Silver Medal *for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.* Given by the Shetland Pony Stud-Book Society.

No. 530 Mungall, William, of Transy, Dunfermline, " Helsa of Transy."

CLASS 89. STALLION, not exceeding 10½ Hands, born before 1929. —PREMIUMS, £8, £5, £3, and £2.

1st No. 522 Mungall, William, of Transy, Dunfermline, " Kitmagur of Penniwells " (1246).
2nd No. 520 Mackenzie, R. W. R., Carpow, Newburgh, Fife, " Ettrick of Earlshall " (1258).
3rd No. 521 Mungall, William, of Transy, Dunfermline, " Rosador of Transy " (1267).

CLASS 90. ENTIRE COLT, not exceeding 10½ Hands, born in 1929 or 1930.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 523	Macbeth, W. Gilchrist, of Dunira, Comrie, "Athos of Dunira."
2nd	No. 524	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Bonny Boy of Earlshall."

CLASS 91. MARE, not exceeding 10½ Hands, with Foal at foot, or due to foal before 31st July 1932.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 530	Mungall, William, of Transy, Dunfermline, "Helsa of Transy."
2nd	No. 526	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Pryde."
3rd	No. 531	Mungall, William, of Transy, Dunfermline, "Rosa of Transy."
4th	No. 529	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Virtuous of Earlshall" (4076).
V	No. 527	Macbeth, W. Gilchrist, of Dunira, Comrie, "Daisy" (4514).

CLASS 92. YELD MARE, not exceeding 10½ Hands.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 536	Mungall, William, of Transy, Dunfermline, "Sunbeam of Transy" (4353).
2nd	No. 534	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Sheba" (4511).
3rd	No. 532	Duguid, Miss H. M., Manar, Inverurie, "Black Pride of Maryfield" (4081).
4th	No. 535	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Elderflower 2nd of Earlshall."
V	No. 533	Duguid, Miss H. M., Manar, Inverurie, "Erica of Maryfield."

CLASS 93. FILLY, not exceeding 10½ Hands, born in 1929 or 1930.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 539	Mackenzie, R. W. R., Carpow, Newburgh, Fife, "Amethea of Earlshall."
2nd	No. 540	Mungall, William, of Transy, Dunfermline, "Bergia of Transy."
3rd	No. 537	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Sonia."
4th	No. 538	Macbeth, W. Gilchrist, of Dunira, Comrie, "Vida of Dunira."

SADDLE CLASSES.

CLASS 94. MARE or GELDING, any age, over 13.2 Hands, and not exceeding 15.2 Hands—*in saddle*.—PREMIUMS, £5, £3, and £2.

1st	No. 541	Dodgson, Miss, Coulmore, Kessock, Inverness, Mare, "Dunbar."
2nd	No. 543	Duguid, Miss H. M., Manar, Inverurie, Gelding, "Fealty" (1303).
3rd	No. 542	Duguid, Miss E. F. M., Manar, Inverurie, Mare, "Melody."

V No. 546 Sutherland, The Duke of, K.T., Dunrobin Castle, Golspie, Gelding, " Kenny."
H No. 544 Fairfax-Lucy, Captain B. F. R., Cameron Barracks, Inverness, Mare, " Véléda."
C No. 547 Webster, Miss E. Ruth, Ashbrook, Arbroath, Gelding, " Sky Rover."

CLASS 95. MARE or GELDING, any age, not exceeding 13.2 Hands—*in saddle.*—PREMIUMS, £5, £3, and £2.

1st No. 549 MacDonald, Ian D., Lochardil, Inverness, Gelding, " Jorrocks."
2nd No. 551 Macliesh, Miss June, Legatsden House, Pitcaple, Aberdeenshire, Gelding, " Honour Bright."
3rd No. 548 Fairfax-Lucy, Captain B. F. R., Cameron Barracks, Inverness, Gelding, " Putty."

JUMPING COMPETITIONS.

Champion Prize of £10 *for the most points in Prizes with one Horse in Classes* 1, 2, *and* 4.

CONDITIONS.—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; Fifth Prize, one point. The money to be evenly divided in the event of a tie.

Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Gem " (9½ points).

CLASS 1. HORSE or PONY, any height.—PREMIUMS, £20, £15, £10, £5, and £3.

1st Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Falkner."
2nd Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Tiny."
3rd Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Gem."
4th Bradley, Ernest, Newton Grange, Great Ayton, Mare, " Kitty."
5th Lee, Arthur, Dovehouse Farm, Solihull, Mare, " Cigarette."

CLASS 2. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the First Prize, and 4 inches for the winner of the Second Prize in Class 1.—PREMIUMS, £20, £15, £10, £5, and £3.

1st Lee, Arthur, Dovehouse Farm, Solihull, Mare, " Cigarette."
2nd Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Tony."
3rd Bradley, Ernest, Newton Grange, Great Ayton, Mare, " Kitty."
4th Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Gem."
5th equal:
Patrick, C. L., Gorgie House Riding Academy, Edinburgh, Gelding, " Nipper."
Robertson, A. D., Langton Farm, Laurieston, Gelding, " Cockleroi."
Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Falkner."

CLASS 3. HORSE or PONY, any height.—PREMIUMS, £10, £8, £5, £3, and £2.

1st Grange, F. V., Alvaston, Nantwich, Gelding, " Desire."
2nd } equal { Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Falkner."
3rd } Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Tony."
4th George Ronaldson, Jun., Market Hill, Wick, Mare, " Beauty."
5th Patrick, C. L., Gorgie House Riding Academy, Edinburgh, Gelding, " Nipper."

CLASS 4. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the First Prize, and 4 inches for the winner of the Second Prize in either of Classes 1 or 2—4 inches extra for the winner of the two First Prizes in Classes 1 and 2.—PREMIUMS, £15, £10, £5, £3, and £2.

1st } equal { Grange, F. V., Alvaston, Nantwich, Gelding, " Desire."
2nd } Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Gem."
3rd Ballantyne, Robert, Raploch, Stirling, Gelding, " Tarzan."
4th } equal { Young, J. B., 33 Carrick Street, Ayr, Gelding, " Toby."
5th } Allen, P. L. R., Davenham Hall, Northwich, Gelding, " Falkner."

SHEEP

BLACKFACE.

PRINCE OF WALES CHAMPION GOLD MEDAL
for best Blackface Sheep.

No. 563 Paterson, John, High Craigton, Milngavie.

Reserve—No. 560 Hamilton, Matthew G., Woolfords, Cobbinshaw, " Golden Hazel."

Silver Cup, value £25, *to be awarded to the Breeder of the best Male Animal, " Extra Stock " eligible to compete.* Given by the Blackface Sheep-Breeders' Association.

No. 563 Cadzow, Charles, Weston, Dunsyre.

Gold Medal, value £5, *to be awarded to the Breeder of Reserve Male Animal, " Extra Stock " eligible to compete.* Given by the Blackface Sheep-Breeders' Association.

No. 560 Hamilton, Matthew G., Woolfords, Cobbinshaw.

CLASS 96. TUP, three Shear and over.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 556	Mitchell, William, Hazelside, Douglas, " Beau Ideal."
2nd	No. 554	Hamilton, Matthew G., Woolfords, Cobbinshaw, " Bob's Favourite."
3rd	No. 557	Mitchell, William, Hazelside, Douglas, " Knight Errant."
4th	No. 555	Hamilton, Matthew G., Woolfords, Cobbinshaw.
V	No. 552	Black, J. Belfrage, Holton, Milnathort.
H	No. 558	Paterson, John, High Craigton, Milngavie.

CLASS 97. TUP, two Shear.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 563	Paterson, John, High Craigton, Milngavie.
2nd	No. 560	Hamilton, Matthew G., Woolfords, Cobbinshaw, " Golden Hazel."
3rd	No. 564	Stewart, Robert, Crianlarich.
4th	No. 559	Hamilton, Matthew G., Woolfords, Cobbinshaw, " Chieftain."
V	No. 561	Honeyman, R. Wemyss, Derculich, Strathtay, " Starlight."

CLASS 98. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 575	Mitchell, William, Hazelside, Douglas.
2nd	No. 572	Hamilton, Matthew G., Woolfords, Cobbinshaw.
3rd	No. 569	Hamilton, Matthew G., Woolfords, Cobbinshaw.
4th	No. 568	Hamilton, Matthew G., Woolfords, Cobbinshaw.
V	No. 567	Hamilton, Matthew G., Woolfords, Cobbinshaw.
H	No. 570	Hamilton, Matthew G., Woolfords, Cobbinshaw.
C	No. 580	Stewart, Robert, Crianlarich.
C	No. 566	Hamilton, Matthew G., Woolfords, Cobbinshaw.
C	No. 574	Mitchell, William, Hazelside, Douglas.

CLASS 99. TUP LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 591	Paterson, John, High Craigton, Milngavie.
2nd	No. 588	Marshall & Mitchell, Bleaton, Blairgowrie.
3rd	No. 582	Black, J. Belfrage, Holton, Milnathort.
V	No. 593	Rottenburg, F. A., of Lochlane, Crieff.
H	No. 592	Rottenburg, F. A., of Lochlane, Crieff.
C	No. 581	Black, J. Belfrage, Holton, Milnathort.
C	No. 586	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire.
C	No. 585	MacGillivray, Captain John, of Calrossie, Nigg, Ross-shire.

Silver Cup, value £25, *to be awarded to the Breeder of the best Female Animal, "Extra Stock" eligible to compete.* Given by the Blackface Sheep-Breeders' Association.

No. 595 Black, J. Belfrage, Holton, Milnathort.

Gold Medal, value £5, *to be awarded to the Breeder of Reserve Female Animal, "Extra Stock" eligible to compete.* Given by the Blackface Sheep-Breeders' Association.

No. 599 Black, J. Belfrage, Holton, Milnathort.

CLASS 100. EWE, above one Shear (born before 1931), unclipped, with Lamb at foot.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 595	Black, J. Belfrage, Holton, Milnathort.
2nd	No. 594	Black, J. Belfrage, Holton, Milnathort.
3rd	No. 598	Rottenburg, F. A., of Lochlane, Crieff.
4th	No. 597	Paterson, John, High Craigton, Milngavie.

CLASS 101. SHEARLING EWE or GIMMER (born in 1931).—PREMIUMS, £10, £5, £3, and £2.

1st	No. 599	Black, J. Belfrage, Holton, Milnathort.
2nd	No. 601	Rottenburg, F. A., of Lochlane, Crieff.
3rd	No. 600	Black, J. Belfrage, Holton, Milnathort.
4th	No. 602	Rottenburg, F. A., of Lochlane, Crieff.

CHEVIOT.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Cheviot Sheep.

No. 621 Douglas, Walter S., Hindhope, Jedburgh.

Reserve—No. 625 Elliot, John, Blackhaugh, Clovenfords.

Borthwick Perpetual Challenge Cup, value £25, gifted by Mr J. Borthwick *for best Sheep in the Cheviot Classes.* Given by Cheviot Sheep Society.

No. 621 Douglas, Walter S., Hindhope, Jedburgh.

Gold Medal, or its value of 7 Guineas, *to the best animal of the sex opposite to that of the winner of the Borthwick Perpetual Challenge Cup.* Given by Cheviot Sheep Society.

No. 657 Elliot, John, Blackhaugh, Clovenfords.

CLASS 102. TUP, above one Shear.—Premiums, £12, £8, £4, and £2.

1st	No. 607	Elliot, George, Brockdam, Chathill, " Mowhaugh Prince Charlie."
2nd	No. 615	Thomson, Messrs, Bushelhill, Cockburnspath, " Lindie " (4907).
3rd	No. 603	Douglas, Walter S., Hindhope, Jedburgh.
4th	No. 609	Elliot, Robert T., Chatto, Kelso, " Time o' Day."
V	No. 606	Elliot, Arthur, Hindhope, Jedburgh.
H	No. 605	Elliot, Arthur, Hindhope, Jedburgh.
C	No. 604	Douglas, Walter S., Hindhope, Jedburgh.

CLASS 103. SHEARLING TUP.—Premiums, £12, £8, £4, and £2.

1st	No. 621	Douglas, Walter S., Hindhope, Jedburgh.
2nd	No. 625	Elliot, John, Blackhaugh, Clovenfords.
3rd	No. 629	Elliot, Robert T., Chatto, Kelso.
4th	No. 626	Elliot, John, Blackhaugh, Clovenfords.
V	No. 627	Elliot, John, Blackhaugh, Clovenfords.
H	No. 628	Elliot, Robert T., Chatto, Kelso.
C	No. 622	Douglas, Walter S., Hindhope, Jedburgh.
C	No. 636	Thomson, Messrs, Bushelhill, Cockburnspath, " Airman."

CLASS 104. TUP LAMB.—Premiums, £5, £3, and £2.

1st	No. 648	Elliot, Thomas R., Attonburn, Kelso.
2nd	No. 643	Elliot, Arthur, Hindhope, Jedburgh.
3rd	No. 645	Elliot, John, Blackhaugh, Clovenfords.
V	No. 647	Elliot, Robert T., Chatto, Kelso.
H	No. 651	Thorburn & Grieve, Glenormiston, Innerleithen.
C	No. 646	Elliot, John, Blackhaugh, Clovenfords.
C	No. 642	Douglas, Walter S., Hindhope, Jedburgh.

CLASS 105. EWE, above one Shear, with Lamb at foot.—Premiums, £10, £5, £3, and £2.

1st	No. 657	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 654	Douglas, Walter S., Hindhope, Jedburgh.
3rd	No. 659	Elliot, Robert T., Chatto, Kelso.
4th	No. 660	Elliot, Thomas R., Attonburn, Kelso.
V	No. 653	Armstrong, Thomas, East Cote, Hawick.
H	No. 655	Elliot, Arthur, Hindhope, Jedburgh.
C	No. 656	Elliot, Arthur, Hindhope, Jedburgh.

CLASS 106. SHEARLING EWE or GIMMER.—Premiums, £10, £5, £3, and £2.

1st	No. 667	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 664	Douglas, Walter S., Hindhope, Jedburgh.
3rd	No. 665	Douglas, Walter S., Hindhope, Jedburgh.
4th	No. 674	Robson, John, Newton, Tarset.
V	No. 670	Hogg, George, Penmanshiel, Grantshouse, " Princess Elizabeth."
H	No. 669	Elliot, Thomas R., Attonburn, Kelso.
C	No. 663	Armstrong, Thomas, East Cote, Hawick.
C	No. 672	Mundell, C. W., Delny, Ross-shire.

CLASS 107. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 682	Elliot, Robert T., Chatto, Kelso.
2nd	No. 683	Elliot, Thomas R., Attonburn, Kelso.
3rd	No. 679	Elliot, Arthur, Hindhope, Jedburgh.
V	No. 685	Thomson, Messrs, Bushelhill, Cockburnspath.
H	No. 678	Douglas, Walter S., Hindhope, Jedburgh.
C	No. 681	Elliot, John, Blackhaugh, Clovenfords.

NORTH COUNTRY CHEVIOT SHEEP.

PRESIDENT'S CHAMPION MEDAL for best North Country Cheviot Sheep.

No. 714 Maxwell, Peter, Thurdistoft, Thurso, " Samson."

Reserve—No. 696 Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, " Ousdale Rambler."

CLASS 108. TUP, above one Shear.—PREMIUMS, £8, £5, and £3.

1st	No. 696	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, " Ousdale Rambler."
2nd	No. 698	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, " Ousdale Major."
3rd	No. 687	Brodie, James, Watten Mains, Wick.
V	No. 690	Campbell, J. R. & I. M., Forest Farm, Ardgay, Ross-shire.
H	No. 693	Maxwell, Peter, Thurdistoft, Thurso, " Sam."
C	No. 688	Campbell, Ian M., Balblair, Invershin, Sutherland.

CLASS 109. SHEARLING TUP.—PREMIUMS, £8, £5, and £3.

1st	No. 714	Maxwell, Peter, Thurdistoft, Thurso, " Samson."
2nd	No. 718	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness, " John's Favourite."
3rd	No. 713	M'Kay, B. S., Geiselittle, Thurso.
V	No. 709	MacGillivray, Captain John, Stronchrubie, Lairg.
H	No. 711	MacGillivray, Captain John, Stronchrubie, Lairg.
C	No. 710	MacGillivray, Captain John, Stronchrubie, Lairg.
C	No. 715	Mundell, W. & C., Dalchork, Lairg.

CLASS 110. EWE, above one Shear, with Lamb at foot.—PREMIUMS, £8, £5, and £3.

1st	No. 725	Campbell, J. R. & I. M., Forest Farm, Ardgay, Ross-shire.
2nd	No. 728	Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
3rd	No. 727	Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
V	No. 723	Campbell, Ian M., Balblair, Invershin, Sutherland.
H	No. 738	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness.
C	No. 730	Henderson, Mrs R. R. Gore Browne, of Bilbster, Bilbster Mains, Wick.
C	No. 734	Maxwell, Peter, Thurdistoft, Thurso, " Ann."

CLASS 111. SHEARLING EWE or GIMMER.—
PREMIUMS, £8, £5, and £3.

1st	No. 749	Henderson, Mrs R. R. Gore Browne, of Bilbster, Bilbster Mains, Wick.
2nd	No. 746	Campbell, J. R. & I. M., Forest Farm, Ardgay, Ross-shire.
3rd	No. 742	Campbell, Ian M., Balblair, Invershin, Sutherland.
V	No. 745	Campbell, J. R., Corriemulzie, Oykell Bridge, Lairg.
H	No. 755	Portland, The Duke of, K.G., P.C., G.C.V.O., Ousdale Home Farm, Berriedale, Caithness.
C	No. 747	Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
C	No. 748	Henderson, Mrs R. R. Gore Browne, of Bilbster, Bilbster Mains, Wick.

BORDER LEICESTER.

PRINCE OF WALES CHAMPION GOLD MEDAL
for best Border Leicester Sheep.

No. 763 Howie, James, & Sons, Muirside, Dumfries, " Sandyknowe Evergreen."

Reserve—No. 772 Findlay, Alexander, Hatton, Newtyle, Angus.

Renfrewshire Perpetual Gold Challenge Cup, value £250, *for best Border Leicester Sheep, " Extra Stock " being eligible to compete.* This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir M'Kean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913.

No. 763 Howie, James, & Sons, Muirside, Dumfries, " Sandyknowe Evergreen."

Reserve—No. 772 Findlay, Alexander, Hatton, Newtyle, Angus.

Tweeddale Gold Medal, value £25, *for best Border Leicester Tup.* Annual Free Income from Fund of £500.

No. 763 Howie, James, & Sons, Muirside, Dumfries, " Sandyknowe Evergreen."

Silver Cup, value £10, 10s., *to be awarded to the Exhibitor of the best Group, consisting of one aged Tup, one Shearling Tup, one aged Ewe, and one Shearling Ewe or Gimmer, the females must be bred by Exhibitor—drawn from Classes* 112 *to* 117. Given by the Society of Border Leicester Sheep-Breeders.

No. 764 Milne, William M., Balbinny, Forfar, " Gay Day " (8313).
No. 781 Milne, William M., Balbinny, Forfar.
No. 805 Milne, William M., Balbinny, Forfar.
No. 816 Milne, William M., Balbinny, Forfar.

Gold Medal *for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as " Extra Stock " not eligible.* Given by the Society of Border Leicester Sheep-Breeders.

No. 763 Howie, James, & Sons, Muirside, Dumfries, " Sandyknowe Evergreen."

CLASS 112. TUP, above one Shear.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 763	Howie, James, & Sons, Muirside, Dumfries, "Sandyknowe Evergreen."
2nd	No. 760	Cross, Robert, Knockdon, Maybole, "Southern Cross" (8926).
3rd	No. 759	Cameron, Robert C., Greenlawdean, Greenlaw, "Sandyknowe Piecemaster" (8898).
4th	No. 764	Milne, William M., Balbinny, Forfar, "Gay Day" (8313).
H	No. 761	Cumming, James Ian, Allanfearn, Inverness, "Border Chance" (7840).
C	No. 765	Moyes, W. C., & Sons, Renmure, Inverkeilor, Angus.

CLASS 113. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 772	Findlay, Alexander, Hatton, Newtyle, Angus.
2nd	No. 781	Milne, William M., Balbinny, Forfar.
3rd	No. 777	Howie, James, Jun., Eglinton Mains, Irvine.
4th	No. 778	Howie, James, & Sons, Muirside, Dumfries.
V	No. 776	Howie, A. B., Eshott Brocks, Felton, Morpeth, "Essential."
H	No. 770	Cross, Robert, Knockdon, Maybole.
C	No. 775	Findlay, Harry, Myreton, Dundee.
C	No. 782	Milne, William M., Balbinny, Forfar.

CLASS 114. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st	No. 789	Howie, James, Jun., Eglinton Mains, Irvine.
2nd	No. 785	Barr, Allan, Hobsland, Monkton.
3rd	No. 793	Howie, James, & Sons, Muirside, Dumfries.
V	No. 792	Howie, James, & Sons, Muirside, Dumfries.
H	No. 791	Howie, James, & Sons, Muirside, Dumfries.
C	No. 799	Young, John, Skerrington Mains, Hurlford.
C	No. 800	Young, John, Skerrington Mains, Hurlford.

Gold Medal *for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as " Extra Stock " not eligible.* Given by the Society of Border Leicester Sheep-Breeders.

No. 812 Findlay, Harry, Myreton, Dundee.

CLASS 115. EWE, above one Shear.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 807	Young, John, Skerrington Mains, Hurlford.
2nd	No. 805	Milne, William M., Balbinny, Forfar.
3rd	No. 804	Howie, James, & Sons, Muirside, Dumfries.
4th	No. 802	Cross, Robert, Knockdon, Maybole.
H	No. 801	Barr, Allan, Hobsland, Monkton.
C	No. 806	Moyes, W. C., & Sons, Renmure, Inverkeilor, Angus.

CLASS 116. SHEARLING EWE or GIMMER.— PREMIUMS, £10, £5, £3, and £2.

1st	No. 812	Findlay, Harry, Myreton, Dundee.
2nd	No. 809	Cameron, Robert C., Greenlawdean, Greenlaw.
3rd	No. 814	Howie, A. B., Eshott Brocks, Felton, Morpeth.
4th	No. 815	Howie, James, & Sons, Muirside, Dumfries.
V	No. 808	Cameron, Robert C., Greenlawdean, Greenlaw.
H	No. 816	Milne, William M., Balbinny, Forfar.

CLASS 117. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 824	Howie, James, Jun., Eglinton Mains, Irvine.
2nd	No. 825	Howie, James, Jun., Eglinton Mains, Irvine.
3rd	No. 831	Young, John, Skerrington Mains, Hurlford.
V	No. 822	Howie, A. B., Eshott Brocks, Felton, Morpeth.
H	No. 828	Milne, William M., Balbinny, Forfar.
C	No. 821	Findlay, Harry, Myreton, Dundee.

HALF-BRED.

PRINCE OF WALES CHAMPION SILVER MEDAL for best Half-Bred Sheep.

No. 832 Armstrong, Thomas, East Cote, Hawick.

Reserve—No. 838 M'Laren, William, Fairnington, Roxburgh.

CLASS 118. SHEARLING TUP.—PREMIUMS, £10, £7, and £3.

1st	No. 832	Armstrong, Thomas, East Cote, Hawick.
2nd	No. 834	Elliot, John, Blackhaugh, Clovenfords.
3rd	No. 835	Elliot, John, Blackhaugh, Clovenfords.
V	No. 836	Hogg, George, Penmanshiel, Grantshouse.

CLASS 119. EWE, above one Shear.—PREMIUMS, £10, £5, and £2.

1st	No. 838	M'Laren, William, Fairnington, Roxburgh.
2nd	No. 839	M'Laren, William, Fairnington, Roxburgh.
3rd	No. 837	Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife.

CLASS 120. SHEARLING EWE or GIMMER.— PREMIUMS, £10, £5, and £2.

1st	No. 841	M'Laren, William, Fairnington, Roxburgh.
2nd	No. 843	M'Laren, William, Fairnington, Roxburgh.
3rd	No. 842	M'Laren, William, Fairnington, Roxburgh.
H	No. 840	Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife.

CLASS 121. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 844	Armstrong, Thomas, East Cote, Hawick.
2nd	No. 845	Armstrong, Thomas, East Cote, Hawick.
C	No. 846	Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife.

OXFORD DOWN.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Oxford Down Sheep.

No. 869 Templeton, T. & M., Sandyknowe, Kelso.

Reserve—No. 852 Templeton, T. & M., Sandyknowe, Kelso.

Scottish Oxford Down Sheep-Breeders' Challenge Bowl, value £50, *for the best Oxford Down Animal bred in Scotland.* Given by Oxford Down Sheep-Breeders' Association.

No. 869 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 122. SHEARLING TUP.—PREMIUMS, £8, £5, and £3.

1st	No. 852	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 851	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 849	Malcolm, William M., of Softlaw, Kelso.
V	No. 848	Malcolm, William M., of Softlaw, Kelso.

CLASS 123. SHEARLING EWE or GIMMER. PREMIUMS, £8, £5, and £3.

1st	No. 859	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 857	Malcolm, William M., of Softlaw, Kelso.
3rd	No. 860	Templeton, T. & M., Sandyknowe, Kelso.
V	No. 858	Malcolm, William M., of Softlaw, Kelso.
H	No. 855	Lawson, William H., Frithfield, Anstruther.
C	No. 856	Lawson, William H., Frithfield, Anstruther.
C	No. 861	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 124. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st	No. 869	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 871	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 866	Malcolm, William M., of Softlaw, Kelso.
V	No. 870	Templeton, T. & M., Sandyknowe, Kelso.
H	No. 867	Malcolm, William M., of Softlaw, Kelso.
C	No. 863	Hutcheon, W. M., Ordley, Auchterless.
C	No. 864	Lawson, William H., Frithfield, Anstruther.
C	No. 865	Lawson, William H., Frithfield, Anstruther.

CLASS 125. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 878	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 877	Malcolm, William M., of Softlaw, Kelso.
3rd	No. 876	Malcolm, William M., of Softlaw, Kelso.
V	No. 879	Templeton, T. & M., Sandyknowe, Kelso.
H	No. 875	Lawson, William H., Frithfield, Anstruther.
C	No. 874	Lawson, William H., Frithfield, Anstruther.
C	No. 880	Templeton, T. & M., Sandyknowe, Kelso.

SUFFOLK.

PRINCE OF WALES CHAMPION GOLD MEDAL for best Suffolk Sheep.

No. 886 Whitton, R. & W., East Nevay, Eassie, Angus, " Kirton Protection" (22,407).

Reserve—No. 919 Whitton, R. & W., East Nevay, Eassie, Angus.

Silver Challenge Cup, value £15, offered by the Suffolk Sheep Society for *the best Group of Suffolk Sheep consisting of one Tup one Shear and over, one Shearling Ewe or Gimmer, one Tup Lamb and one Ewe Lamb, the Females and Tup Lamb must be bred by Exhibitor—drawn from Classes* 126 *to* 129. *Sheep must be registered or eligible for registration in the Suffolk Flock Book.* Given by the Suffolk Sheep Society.

No. 886 Whitton, R. & W., East Nevay, Eassie, Angus, " Kirton Protection " (22,407).
No. 896 Whitton, R. & W., East Nevay, Eassie, Angus.
No. 907 Whitton, R. & W., East Nevay, Eassie, Angus.
No. 919 Whitton, R. & W., East Nevay, Eassie, Angus.

CLASS 126. TUP, one Shear and over.—PREMIUMS, £8, £5, and £3.

1st No. 886 Whitton, R. & W., East Nevay, Eassie, Angus, " Kirton Protection " (22,407).
2nd No. 882 Johnston, W. B., Airneyfoul, Glamis, " Stetchworth Supreme " (22,218).
3rd No. 884 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
V No. 887 Whitton, R. & W., East Nevay, Eassie, Angus, " Stetchworth Gold Standard " (22,406).
H No. 881 Golightly, William, Whitelaw, Haddington, " Whitelaw Chief " (22,164).
C No. 885 Stodart, Charles, Leaston, Humbie, " Foxearth Star II." (22,361).

CLASS 127. SHEARLING EWE or GIMMER.— PREMIUMS, £8, £5, and £3.

1st No. 889 Golightly, William, Whitelaw, Haddington.
2nd No. 895 Stodart, Charles, Leaston, Humbie.
3rd No. 893 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
V No. 896 Whitton, R. & W., East Nevay, Eassie, Angus.
H No. 892 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
C No. 890 Golightly, William, Whitelaw, Haddington.

CLASS 128. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st No. 907 Whitton, R. & W., East Nevay, Eassie, Angus.
2nd No. 898 Duncan, Commander J. A., Parkhill, Arbroath.
3rd No. 903 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
V No. 899 Duncan, Commander J. A., Parkhill, Arbroath.
H No. 904 Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
C No. 900 Duncan, Commander J. A., Parkhill, Arbroath.
C No. 908 Whitton, R. & W., East Nevay, Eassie, Angus.

CLASS 129. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 919	Whitton, R. & W., East Nevay, Eassie, Angus.
2nd	No. 920	Whitton, R. & W., East Nevay, Eassie, Angus.
3rd	No. 918	Stodart, Charles, Leaston, Humbie.
V	No. 915	Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
H	No. 916	Prince-Smith, Sir Prince, Bart., Southburn House, Driffield, East Yorkshire.
C	No. 910	Duncan, Commander J. A., Parkhill, Arbroath.

SHROPSHIRE.

PRINCE OF WALES CHAMPION SILVER MEDAL
for best Shropshire Sheep.

No. 922 Buttar, T. A., Corston, Coupar-Angus.

Reserve—No. 926 Buttar, T. A., Corston, Coupar-Angus.

CLASS 130. TUP, any age.—PREMIUMS, £6, £4, and £2.

1st	No. 922	Buttar, T. A., Corston, Coupar-Angus.
2nd	No. 923	Buttar, T. A., Corston, Coupar-Angus.
3rd	No. 921	Buttar, T. A., Corston, Coupar-Angus.

CLASS 131. EWE or GIMMER.—PREMIUMS, £5, £3, and £2.

1st	No. 926	Buttar, T. A., Corston, Coupar-Angus.
2nd	No. 927	Buttar, T. A., Corston, Coupar-Angus.
3rd	No. 928	Buttar, T. A., Corston, Coupar-Angus.

DORSET HORN.

PRINCE OF WALES CHAMPION SILVER MEDAL
for best Dorset Horn Sheep.

No. 936 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, 451 Ewe.

Reserve—No. 929 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, " Wellow 200 " (6213).

CLASS 132. TUP, any age.—PREMIUMS, £6, £4, and £2.

1st	No. 929	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, " Wellow 200 " (6213).
2nd	No. 930	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, " Newclose 130."
3rd	No. 931	Tinker, Charley, of Kilmartin, Inverness, 192.

CLASS 133. EWE or GIMMER.—PREMIUMS, £5, £3, and £2.

1st No. 936 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, 451 Ewe.
2nd No. 938 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, 451 Ewe.
3rd No. 937 Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline, 451 Ewe.
V No. 932 Bruce, Lord, Broomhall, Dunfermline, 451 Ewe.

FAT SHEEP.

PRINCE OF WALES CHAMPION SILVER MEDAL for best Pen of Fat Sheep.

No. 942 Bruce, Lord, Broomhall, Dunfermline (Dorset Down).

Reserve—No. 943 Leitch, Messrs, Inchstelly, Alves, Forres (Suffolk Tup—Half-bred Ewes).

CLASS 134. THREE FAT LAMBS, any Breed or Cross, dropped in the year of the Show.—PREMIUMS, £5, £3, and £2.

1st No. 942 Bruce, Lord, Broomhall, Dunfermline (Dorset Down).
2nd No. 943 Leitch, Messrs, Inchstelly, Alves, Forres (Suffolk Tup—Half-bred Ewes).

GOATS

PRINCE OF WALES CHAMPION SILVER MEDAL for best Animal in the Goat Classes.

No. 955 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).

Reserve—No. 950 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), " Didgemere Snowflake " (S 152).

The Competition for Goats is recognised by the British Goat Society, Roydon Road, Diss, Norfolk, which will give Challenge Certificates (qualifying for a Championship) :—

For the best Female Goat over two years that has borne a kid.

No. 955 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).

For the best dual purpose Goat over two years that has borne a kid.

No. 955 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).

BREED CHALLENGE CERTIFICATES for

Best Toggenburg.

(No entry.)

Best Saanen.

No. 950 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), " Didgemere Snowflake " (S 152).

Best British Alpine.

No. 946 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British Alpine), " Cornish Faith " (BA 149).

Best British Saanen.

No. 948 Blair, Mrs W. E., Blairholm Goat Breeding and Poultry Farm, Kirknewton (British Saanen), " Lelia " (9148).

Best British Toggenburg.

No. 947 Swan, Miss E., Red Gables, West Linton (British Toggenburg), " Angella " (10,056).

Best Anglo-Nubian Female Goat, over two years, that has borne a kid.

(No entry.)

Bronze Medal for the best Female exhibit in Classes 135 to 140 inclusive.

No. 955 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).

Challenge Cup, value 20 Guineas, ***for the best Female Goat in the Show.*** Given by the late Lord Dewar, London.

No. 955 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).

Challenge Cup, value £10, ***for best Female Anglo-Nubian Goat over two years old, in Milk, entered in the Anglo-Nubian section of the Herd-Book, " Extra Stock " being eligible to compete.*** Given by Mrs S. Macdonald, Garrochty.

(No entry.)

CLASS 135. FEMALE GOAT, Toggenburg, British Toggenburg, or British Alpine, in Milk.—PREMIUMS, £3, £2, and £1.

1st	No. 946	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British Alpine), " Cornish Faith " (BA 149).
2nd	No. 945	Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), " Dupplin Delight " (8080).
3rd	No. 947	Swan, Miss E., Red Gables, West Linton (British Toggenburg), " Angella " (10,056).
V	No. 944	Cameron, Mrs Allan, Darris, Dores, Inverness (British Alpine), " Dupplin Dodo " (8081).

CLASS 136. FEMALE GOAT, Saanen or British Saanen, in Milk.—PREMIUMS, £3, £2, and £1.

1st	No. 950	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), " Didgemere Snowflake " (S 152).
2nd	No. 948	Blair, Mrs W. E., Blairholm Goat Breeding and Poultry Farm, Kirknewton (British Saanen), " Lelia " (9148).

CLASS 137. FEMALE GOAT, any other variety, in Milk.—PREMIUMS, £3, £2, and £1.

1st	No. 955	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).
2nd	No. 952	Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British), " Dupplin Buttercup " (9115).
3rd	No. 951	Cameron, Mrs Allan, Darris, Dores, Inverness (British), " Darris Bustle " (FB 430).
V	No. 953	Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British), " Dupplin Curler " (9679).

CLASS 138. GOATLING, Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years.—Premiums, £3, £2, and £1.

1st No. 956 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), "Dupplin Edelweiss" (10,250).
2nd No. 957 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), "Dupplin Eschscholtzia" (10,248).

CLASS 139. GOATLING, any other Variety, over one but not exceeding two years.—Premiums, £3, £2, and £1.

1st No. 963 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), "Didgemere Sophia" (S 183).
2nd No. 962 Jeans, John, Ley Lodge, Kintore (British Saanen), "Heddon Salt" (10,340).
3rd No. 960 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British), "Dupplin Elizabeth" (10,044).
V No. 959 Cameron, Mrs Allan, Darris, Dores, Inverness (British), "Darris Colleen" (10,032).
H No. 961 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British), "Dupplin Erica" (10,247).

CLASS 140. FEMALE KID, any Variety, not exceeding one year.—Premiums, £3, £2, and £1.

1st No. 967 Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), "Dissington Merrily" (10,503).
2nd No. 965 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), "Dupplin Forget-me-Not" (10,531).
3rd No. 964 Cameron, Mrs Allan, Darris, Dores, Inverness (British), "Darris Deirdree" (FB 489).

CLASS 141. MALE KID, any Variety, not exceeding one year.—Premiums, £3, £2, and £1.

1st No. 969 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British), "Dupplin Fencer" (10,529).
2nd No. 971 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), "Dupplin Foxglove" (10,532).
3rd No. 968 Cameron, Mrs Allan, Darris, Dores, Inverness (British), "Darris Dirk" (FB 491).
V No. 970 Forteviot, Margaret, Lady, Galloway House, Garlieston, Wigtownshire (British Alpine), "Dupplin Fisher" (10,530).

CLASS 142. MILKING COMPETITION, for quality, open to Classes 135 to 137.—PREMIUMS, £3, £2, and £1.

1st	No. 955	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).
2nd	No. 950	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), " Didgemere Snowflake " (S 152).
3rd	No. 946	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British Alpine), " Cornish Faith " (BA 149).
V	No. 947	Swan, Miss E., Red Gables, West Linton (British Toggenburg), " Angella " (10,056).

CLASS 143. MILKING COMPETITION, for quantity, open to Classes 135 to 137.—PREMIUMS, £3, £2, and £1.

1st	No. 955	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British), " R3 Didgemere Marvel *Q*Q*Q*Q* " (8112).
2nd	No. 950	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (Saanen), " Didgemere Snowflake " (S 152).
3rd	No. 946	Rotherford, Mrs R. W., The Pines, Throckley, Newcastle-upon-Tyne (British Alpine), " Cornish Faith " (BA 149).
V	No. 947	Swan, Miss E., Red Gables, West Linton (British Toggenburg), " Angella " (10,056).

PIGS

LARGE WHITE.

PRINCE OF WALES CHAMPION GOLD MEDAL
for best Large White Pig.

No. 973 Elder, A. J., City Mills, Dunfermline, "Touch Hercules" (73,119).

Reserve—No. 991 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Lady Maggie 12th" (205,010).

Gold Medal, value £5 (or cash), for best Large White Boar. Given by the National Pig-Breeders' Association.

No. 973 Elder, A. J., City Mills, Dunfermline, "Touch Hercules" (73,119).

CLASS 144. BOAR, born before 1931.—PREMIUMS, £8, £4, and £2.

1st No. 973 Elder, A. J., City Mills, Dunfermline, "Touch Hercules" (73,119).
2nd No. 974 Mollison, Dan M., Roberton, Alvah, "Gogar Macbeth 18th" (76,475).
3rd No. 972 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Whittingham King David 23rd" (66,367).

CLASS 145. BOAR, born in 1931.—PREMIUMS, £8, £4, and £2.

1st No. 976 Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife, "Halbeath Jay 8th" (76,539).
2nd No. 984 Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Tollerton Major 2nd" (Ear No. 75).
3rd No. 977 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Whittingham Bradbury 7th" (78,385).
V No. 978 Hutcheson, J. M., East Kerrowgair, Dalcross, Inverness, "Kerrowgair Boy" (Ear No. 58).
H No. 983 Ware, A. F., Woodend, Dalcross, Inverness, "Dalcross Hercules" (76,159).
C No. 979 Leitch, Messrs, Inchstelly, Alves, Forres, "Inchstelly Moderator" (76,929).

CLASS 146. BOAR, born in 1932.—PREMIUMS, £6, £3, and £1.

1st No. 986 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Victor 2nd" (Ear No. 3123).
2nd No. 987 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Victor 3rd" (Ear No. 3124).
3rd No. 988 Elder, A. J., City Mills, Dunfermline (Ear No. 561).
V No. 989 Leitch, Messrs, Inchstelly, Alves, Forres (Ear No. 550).

Gold Medal, value £5 (or cash), for best Large White Sow. Given by the National Pig-Breeders' Association.

No. 991 Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Lady Maggie 12th" (205,010).

CLASS 147. SOW, born before 1931.—PREMIUMS, £8, £4, and £2.

1st	No. 991	Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Lady Maggie 12th" (205,010).
2nd	No. 996	Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Barfield Queen 15th" (192,930).
3rd	No. 992	Elder, A. J., City Mills, Dunfermline, "Touch Sunflower 2nd" (191,532).
H	No. 995	Ware, A. F., Woodend, Dalcross, Inverness, "Walton Queen Mary 14th" (191,874).

CLASS 148. SOW, born in 1931.—PREMIUMS, £8, £4, and £2.

1st	No. 1002	Leitch, Messrs, Inchstelly, Alves, Forres, "Inchstelly Maggie 363rd" (Ear No. 363).
2nd	No. 1003	Leitch, Messrs, Inchstelly, Alves, Forres, "Inchstelly Maggie 372nd" (Ear No. 372).
3rd	No. 1000	Elder, A. J., City Mills, Dunfermline, "Touch Buttercup 27th."
V	No. 1010	Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Glebe Duchess" (Ear No. 98).
H	No. 997	Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Walton Queen Mary 25th" (208,250).
C	No. 1009	Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Glebe Queen Mary 9th" (204,976).

CLASS 149. SOW, born in 1932.—PREMIUMS, £6, £3, and £1.

1st	No. 1011	Cochrane, Lieut.-Colonel Lord, of Cults, Crawford Priory, Springfield, Fife (Ear No. 294).
2nd	No. 1018	Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Halbeath Beauty 8th" (Ear No. 224).
3rd	No. 1019	Winter, William Cameron, Royal Edinburgh Hospital, Morningside Place, Edinburgh, "Halbeath Beauty 9th" (Ear No. 225).
V	No. 1012	Cowper, John E. B., Gogar Mains, Corstorphine, Edinburgh, "Gogar Betty 5th" (Ear No. 3110).
H	No. 1016	Leitch, Messrs, Inchstelly, Alves, Forres (Ear No. 553).
C	No. 1015	Elder, A. J., City Mills, Dunfermline (Ear No. 566).

MIDDLE WHITE.

CLASS 150.
CLASS 151.
CLASS 152.
CLASS 153.
Cancelled owing to insufficient entries.

LARGE BLACK.

CLASS 154.
CLASS 155.
CLASS 156.
CLASS 157.
CLASS 158.
Cancelled owing to insufficient entries.

POULTRY

First Premium—Twenty Shillings. Second Premium—Ten Shillings. In each Class in which there are four or more entries a Third Premium of Five Shillings may be awarded, provided there is sufficient merit in the pens.

Champion Challenge Silver Salver, value £30, *for the best exhibit in the Poultry Classes.* Given by the late Lord Dewar.

No. 232 Belbin, C. N., Nortonthorpe Hall, Huddersfield.

CHAMPION SILVER MEDALS.

1. *Best Cock, any Variety.*

No. 232 Belbin, C. N., Nortonthorpe Hall, Huddersfield.

2. *Best Hen, any Variety.*

No. 163 Reid, David, Firthview, Portgordon.

3. *Best Cockerel, any Variety.*

No. 194 Rodger, David, Bonnyton Farm, Eaglesham.

4. *Best Pullet, any Variety.*

No. 210 Aitkenhead, Charles, Carr House Farm, New Seaham.

5. *Best Waterfowl.*

No. 391 Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

6. *Best Turkey.*

No. 433 Rottenburg, F. A., of Lochlane, Crieff.

7. *Best Utility Bird (Classes 97 to 109).*

No. 325 Argo, Fred, Bructor, Inverurie.

CLASS 1. LEGHORN—White—Cock.

1st No. 1 Binnie, W., Garth House, Denny.

CLASS 2. LEGHORN—White—Hen.

1st No. 2 Binnie, W., Garth House, Denny.

CLASS 3. LEGHORN—White—Cockerel.

2nd No. 3 Binnie, W., Garth House, Denny.

CLASS 4. LEGHORN—White—Pullet.

1st No. 4 Binnie, W., Garth House, Denny.

CLASS 5. LEGHORN—Exchequer—Cock or Cockerel.

(No entry.)

CLASS 6. LEGHORN—Exchequer—Hen or Pullet.

2nd No. 5 Reid, D. N., Tullich, Lochcarron (Hen).

CLASS 7. LEGHORN—Any other Colour—Cock.

1st No. 6 Argo, Fred, Bructor, Inverurie (Brown).
2nd No. 10 Scott, James, Jun., Sornhill, Galston (Brown).
3rd No. 8 Fotheringham, W. G., Westerton, Blackford (Brown).

CLASS 8. LEGHORN—Any other Colour—Hen.

1st No. 15 Rodger, David, Bonnyton Farm, Eaglesham (Black).
2nd No. 13 Mealls, David, 16 West Borland Road, Denny (Brown).
3rd No. 17 Ross, J. C., Stirling Road, Larbert (Brown).
V No. 11 Argo, Fred, Bructor, Inverurie (Brown).
H No. 14 Mealls, David, 16 West Borland Road, Denny (Brown).
C No. 16 Ross, J. C., Stirling Road, Larbert (Black).

CLASS 9. LEGHORN—Any other Colour—Cockerel.

(No entry.)

CLASS 10. LEGHORN—Any other Colour—Pullet.

2nd No. 19 Ross, J. C., Stirling Road, Larbert (Brown).
3rd No. 20 Ross, J. C., Stirling Road, Larbert (Black).
V No. 18 Penny, James G., Sauchie Poultry Farm, Crieff (Black).

CLASS 11. MINORCA—Cock.

1st No. 21 Binnie, W., Garth House, Denny.
2nd No. 22 Binnie, W., Garth House, Denny.

CLASS 12. MINORCA—Hen.

1st No. 23 Argo, Fred, Bructor, Inverurie.
2nd No. 24 Binnie, W., Garth House, Denny.
3rd No. 27 Russell, John, Tinto View, Pettinain, Biggar.
V No. 25 Dalrymple, John, & Son, Meadowview, Leslie.

CLASS 13. MINORCA—Cockerel.

1st No. 29 Argo, Fred, Bructor, Inverurie.
2nd No. 30 Binnie, W., Garth House, Denny.
3rd No. 31 Sandison, Alfred L., Bakery, Echt.

CLASS 14. MINORCA—Pullet.

1st No. 33 Argo, Fred, Bructor, Inverurie.
2nd No. 34 Binnie, W., Garth House, Denny.
V No. 32 Argo, Fred, Bructor, Inverurie.

CLASS 15. HAMBURGH—Cock.

1st	No. 35	Milligan, W., Mid Murray, East Kilbride.

CLASS 16. HAMBURGH—Hen.

1st	No. 36	Milligan, W., Mid Murray, East Kilbride.

CLASS 17. HAMBURGH—Cockerel.

(No entry.)

CLASS 18. HAMBURGH—Pullet.

(No entry.)

CLASS 19. SCOTCH GREY—Cock.

1st	No. 37	Ramsay, William, Busby Farm, Crosshouse, Kilmarnock.
2nd	No. 39	Stirling, Thomas, Graystale Farm, Stirling.
3rd	No. 38	Retson, J. M., Townhead Farm, Newton Mearns.
V	No. 40	Young, Dr Stephen, 6 Woodside Place, Glasgow.

CLASS 20. SCOTCH GREY—Hen.

1st	No. 41	Ramsay, William, Busby Farm, Crosshouse, Kilmarnock.
2nd	No. 46	Young, Dr Stephen, 6 Woodside Place, Glasgow.
3rd	No. 44	Stirling, Thomas, Graystale Farm, Stirling.
V	No. 43	Retson, J. M., Townhead Farm, Newton Mearns.
H	No. 42	Ramsay, William, Busby Farm, Crosshouse, Kilmarnock.
C	No. 45	Stirling, Thomas, Graystale Farm, Stirling.

CLASS 21. SCOTCH GREY—Cockerel.

1st	No. 49	Young, Dr Stephen, 6 Woodside Place, Glasgow.
2nd	No. 50	Young, Dr Stephen, 6 Woodside Place, Glasgow.
3rd	No. 48	Stirling, Thomas, Graystale Farm, Stirling.
V	No. 47	Hamilton, Thomas, Kirkton Kilns, Bathgate.

CLASS 22. SCOTCH GREY—Pullet.

1st	No. 53	Retson, J. M., Townhead Farm, Newton Mearns.
2nd	No. 56	Young, Dr Stephen, 6 Woodside Place, Glasgow.
3rd	No. 55	Young, Dr Stephen, 6 Woodside Place, Glasgow.
V	No. 51	Hamilton, Thomas, Kirkton Kilns, Bathgate.
H	No. 52	Ramsay, William, Busby Farm, Crosshouse, Kilmarnock.
C	No. 54	Stirling, Thomas, Graystale Farm, Stirling.

CLASS 23. PLYMOUTH ROCK—Barred—Cock.

1st	No. 58	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 57	Argo, Fred, Bructor, Inverurie.
3rd	No. 59	Brown, Charles, Ivybank, Kintore.
V	No. 63	Strang, J. & J., Halfway House, Cardonald.
H	No. 60	Grant, Mrs Norman, Green World, Copthorne, Sussex.
C	No. 61	Grant, Mrs Norman, Green World, Copthorne, Sussex.

CLASS 24. PLYMOUTH ROCK—Barred—Hen.

1st	No. 64	Brown, Charles, Ivybank, Kintore.
2nd	No. 68	Reid, David, Firthview, Portgordon.
3rd	No. 67	Kent, Archibald, Cairnmhor, Brandon Street, Dunoon.
V	No. 71	Wilson, Ludovic, Thorn Farm, Dollar.
H	No. 69	Strang, J. & J., Halfway House, Cardonald.
C	No. 70	Wilson, Ludovic, Thorn Farm, Dollar.

CLASS 25. PLYMOUTH ROCK—Barred—Cockerel.

1st	No. 72	Argo, Fred, Bructor, Inverurie.
2nd	No. 73	Grant, Mrs Norman, Green World, Copthorne, Sussex.

CLASS 26. PLYMOUTH ROCK—Barred—Pullet.

1st	No. 74	Argo, Fred, Bructor, Inverurie.
2nd	No. 75	Argo, Fred, Bructor, Inverurie.
V	No. 76	Grant, Mrs Norman, Green World, Copthorne, Sussex.

CLASS 27. PLYMOUTH ROCK—Any other Colour—Cock or Cockerel.

1st	No. 78	Lambie, Gavin, 45 Temple Hill, Troon (Cock, White).
2nd	No. 77	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cock, White).
V	No. 79	Seed, Reginald, Shank Castle, Longtown, Cumberland (Cock, Buff).

CLASS 28. PLYMOUTH ROCK—Any other Colour—Hen or Pullet.

1st	No. 80	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen, White).
2nd	No. 81	Lambie, Gavin, 45 Temple Hill, Troon (Hen, White).
3rd	No. 82	Rodger, David, Bonnyton Farm, Eaglesham (Pullet, Columbian).
V	No. 83	Seed, Reginald, Shank Castle, Longtown, Cumberland (Pullet, Buff).

CLASS 29. ORPINGTON—Black—Cock.

1st	No. 85	Reid, David, Firthview, Portgordon.
2nd	No. 84	Belbin, C. N., Nortonthorpe Hall, Huddersfield.

CLASS 30. ORPINGTON—Black—Hen.

1st	No. 88	Reid, David, Firthview, Portgordon.
2nd	No. 87	Reid, David, Firthview, Portgordon.

CLASS 31. ORPINGTON—Any other Colour—Cock.

1st	No. 91	Reid, David, Firthview, Portgordon (Buff).
2nd	No. 90	Cameron, Mrs Allan, Darris, Dores, Inverness (Buff).

CLASS 32. ORPINGTON—Any other Colour—Hen.

1st	No. 94	Reid, David, Firthview, Portgordon (Buff).
2nd	No. 93	Reid, David, Firthview, Portgordon (Buff).
3rd	No. 95	Shewan, Alexander, Longhillock, Alves, Forres (Buff).

CLASS 33. ORPINGTON—Any Colour—Cockerel.

1st	No. 96	Shewan, Alexander, Longhillock, Alves, Forres (Buff).

CLASS 34. ORPINGTON—Any Colour—Pullet.

1st	No. 97	Shewan, Alexander, Longhillock, Alves, Forres (Buff).

CLASS 35. WYANDOTTE—Gold or Silver—Cock.

1st	No. 101	Morgan, William, Balcurvie, Windygates (Gold).
2nd	No. 99	Doig, William L., Hospital, Invergordon (Gold).

CLASS 36. WYANDOTTE—Gold or Silver—Hen.

(No entry.)

CLASS 37. WYANDOTTE—Gold or Silver—Cockerel.

(No entry.)

CLASS 38. WYANDOTTE—Gold or Silver—Pullet.

1st	No. 102	Morgan, William, Balcurvie, Windygates (Gold).

CLASS 39. WYANDOTTE—White—Cock.

1st	No. 103	Binnie, W., Garth House, Denny.
2nd	No. 104	Doig, William L., Hospital, Invergordon.
3rd	No. 106	Rodger, David, Bonnyton Farm, Eaglesham.
V	No. 105	Reid, David, Firthview, Portgordon.
H	No. 107	Russell, John, Tinto View, Pettinain, Biggar.
C	No. 110	Williamson, George, Dixonfield, Thurso.

CLASS 40. WYANDOTTE—White—Hen.

1st	No. 116	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 115	Reid, David, Firthview, Portgordon.
3rd	No. 111	Argo, Fred, Bructor, Inverurie.
V	No. 113	Morgan, William, Balcurvie, Windygates.
H	No. 112	Binnie, W., Garth House, Denny.
C	No. 114	Reid, David, Firthview, Portgordon.

CLASS 41. WYANDOTTE—White—Cockerel.

1st	No. 118	Binnie, W., Garth House, Denny.
2nd	No. 121	Rodger, David, Bonnyton Farm, Eaglesham.
3rd	No. 120	Reid, David, Firthview, Portgordon.

CLASS 42. WYANDOTTE—White—Pullet.

1st	No. 128	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 123	Binnie, W., Garth House, Denny.
3rd	No. 127	Reid, David, Firthview, Portgordon.
V	No. 124	Cross, Sir William, Bart., of Scatwell, Muir of Ord.
H	No. 126	Lyle, Mrs, Glendelvine, Murthly.
C	No. 125	Cross, Sir William, Bart., of Scatwell, Muir of Ord.

CLASS 43. WYANDOTTE—Partridge—Cock or Cockerel.

1st	No. 130	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Cock).
2nd	No. 129	Argo, Fred, Bructor, Inverurie (Cock).
V	No. 131	Brown, Charles, Ivybank, Kintore (Cock).

CLASS 44. WYANDOTTE—Partridge—Hen or Pullet.

1st	No. 132	Brown, Charles, Ivybank, Kintore (Hen).
2nd	No. 134	Smales, L. H., Arundel Howe, Whitby (Hen).
3rd	No. 135	Smales, L. H., Arundel Howe, Whitby (Hen).

CLASS 45. WYANDOTTE—Columbian—Cock or Cockerel.

1st	No. 136	Brown, Fred, Woodside, Grimscar, Huddersfield (Cock).
2nd	No. 139	Parker, Miss M. S., Baldernock, Milngavie (Cock).
3rd	No. 142	Tindal, Mrs Frances M., Ben Lomond Farm, Rowardennan, Loch Lomond (Cock).
V	No. 140	Parker, Miss M. S., Baldernock, Milngavie (Cock).
H	No. 137	Dickinson, J., & Son, Grove House, Headcorn, Ashford, Kent (Cockerel).

CLASS 46. WYANDOTTE—Columbian—Hen or Pullet.

1st	No. 143	Brown, Fred, Woodside, Grimscar, Huddersfield (Hen).
2nd	No. 144	Dickinson, J., & Son, Grove House, Headcorn, Ashford, Kent (Pullet).
3rd	No. 146	Parker, Miss M. S., Baldernock, Milngavie (Hen).
C	No. 148	Tindal, Mrs Frances M., Ben Lomond Farm, Rowardennan, Loch Lomond (Hen).

CLASS 47. WYANDOTTE—Any other Colour—Cock or Cockerel.

1st	No. 151	Tocher, C., Clunas, Nairn (Cock, Black).
2nd	No. 149	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cock, Barred).

CLASS 48. WYANDOTTE—Any other Colour—Hen or Pullet.

1st	No. 153	Tocher, C., Clunas, Nairn (Hen, Black).
2nd	No. 152	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen, Barred).

CLASS 49. RHODE ISLAND RED—Cock.

1st	No. 154	Argo, Fred, Bructor, Inverurie.
2nd	No. 156	Morgan, William, Balcurvie, Windygates.
3rd	No. 158	Reid, David, Firthview, Portgordon.
V	No. 157	Petrie, Alexander, Mayfield, Airth Station, Falkirk.
H	No. 155	Brown, Charles, Ivybank, Kintore.
C	No. 159	Sinclair, Ben M., Tain, Olrig, Castletown, Caithness.

CLASS 50. RHODE ISLAND RED—Hen.

1st	No. 163	Reid, David, Firthview, Portgordon.
2nd	No. 160	Brown, Charles, Ivybank, Kintore.
3rd	No. 161	Morgan, William, Balcurvie, Windygates.
V	No. 164	Reid, David, Firthview, Portgordon.
H	No. 168	Wallace, William, Monkrigg Mains, Haddington.
C	No. 162	Petrie, Alexander, Mayfield, Airth Station, Falkirk.
C	No. 167	Sinclair, Ben. M., Tain, Olrig, Castletown, Caithness.

CLASS 51. RHODE ISLAND RED—Cockerel.

1st	No. 169	Argo, Fred, Bructor, Inverurie.
2nd	No. 174	Wallace, William, Monkrigg Mains, Haddington.
3rd	No. 171	Petrie, Alexander, Mayfield, Airth Station, Falkirk.
V	No. 172	Reid, David, Firthview, Portgordon.
H	No. 173	Seed, Reginald, Shank Castle, Longtown, Cumberland.
C	No. 170	Miller, Sinclair, 54 Louisburgh, Wick.

CLASS 52. RHODE ISLAND RED—Pullet.

1st	No. 180	Reid, David, Firthview, Portgordon.
2nd	No. 179	Petrie, Alexander, Mayfield, Airth Station, Falkirk.
3rd	No. 175	Argo, Fred, Bructor, Inverurie.
V	No. 181	Seed, Reginald, Shank Castle, Longtown, Cumberland.
H	No. 178	Penny, James G., Sauchie Poultry Farm, Crieff.
C	No. 176	Miller, Sinclair, 54 Louisburgh, Wick.

CLASS 53. SUSSEX—Light—Cock.

1st	No. 185	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 182	Argo, Fred, Bructor, Inverurie.
3rd	No. 184	Morgan, William, Balcurvie, Windygates.
V	No. 186	White, James, Carterhaugh Home Farm, Selkirk.

CLASS 54. SUSSEX—Light—Hen.

1st	No. 189	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 187	Argo, Fred, Bructor, Inverurie.
3rd	No. 188	Morgan, William, Balcurvie, Windygates.
V	No. 190	White, James, Carterhaugh Home Farm, Selkirk.

CLASS 55. SUSSEX—Light—Cockerel.

1st	No. 194	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 192	Hamilton, Thomas, Kirkton Kilns, Bathgate.
3rd	No. 193	Morgan, William, Balcurvie, Windygates.

CLASS 56. SUSSEX—Light—Pullet.

1st	No. 198	White, James, Carterhaugh Home Farm, Selkirk.
2nd	No. 197	Rodger, David, Bonnyton Farm, Eaglesham.
3rd	No. 195	Hamilton, Thomas, Kirkton Kilns, Bathgate.

CLASS 57. SUSSEX—Any other Variety—Cock.

2nd	No. 199	Sinclair, Ben. M., Tain, Olrig, Castletown, Caithness (Buff).

CLASS 58. SUSSEX—Any other Variety—Hen.

(No entry.)

CLASS 59. SUSSEX—Any other Variety—Cockerel.

(No entry.)

CLASS 60. SUSSEX—Any other Variety—Pullet.

(No entry.)

CLASS 61. DORKING—Coloured—Cock.

1st	No. 200	Aitkenhead, Charles, Carr House Farm, New Seaham.

CLASS 62. DORKING—Coloured—Hen.

1st	No. 201	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 203	Morgan, William, Balcurvie, Windygates.

CLASS 63. DORKING—Coloured—Cockerel.

(No entry.)

CLASS 64. DORKING—Coloured—Pullet.

(No entry.)

CLASS 65. DORKING—Silver Grey—Cock.

1st	No. 205	Mechie, John, Upper Greens, Auchtermuchty.
2nd	No. 204	Aitkenhead, Charles, Carr House Farm, New Seaham.

CLASS 66. DORKING—Silver Grey—Hen.

1st	No. 207	Mechie, John, Upper Greens, Auchtermuchty.
2nd	No. 208	Walker, John, Skinners Steps, Cupar, Fife.

CLASS 67. DORKING—Silver Grey—Cockerel.

1st	No. 209	Mechie, John, Upper Greens, Auchtermuchty.

CLASS 68. DORKING—Silver Grey—Pullet.

1st	No. 210	Aitkenhead, Charles, Carr House Farm, New Seaham.
2nd	No. 211	Argo, Fred, Bructor, Inverurie.
V	No. 212	Mechie, John, Upper Greens, Auchtermuchty.

CLASS 69. SCOTS DUMPY—Cock.

1st	No. 213	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 215	Kerr, J. E., of Harviestoun, Dollar.
V	No. 214	Kerr, J. E., of Harviestoun, Dollar.

CLASS 70. SCOTS DUMPY—Hen.

1st	No. 216	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 217	Kerr, J. E., of Harviestoun, Dollar.
V	No. 218	Kerr, J. E., of Harviestoun, Dollar.

CLASS 71. SCOTS DUMPY—Cockerel.

1st	No. 219	Brown, J. W., Rosehill, Summerston, Glasgow.

CLASS 72. SCOTS DUMPY—Pullet.

1st	No. 220	Brown, J. W., Rosehill, Summerston, Glasgow.

CLASS 73. BARNEVELDER—Cock.

1st	No. 224	Petrie, Alexander, Mayfield, Airth Station, Falkirk.
2nd	No. 222	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.
3rd	No. 221	Binnie, W., Garth House, Denny.
V	No. 223	Morgan, William, Balcurvie, Windygates.

CLASS 74. BARNEVELDER—Hen.

1st	No. 226	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.
2nd	No. 225	Binnie, W., Garth House, Denny.
V	No. 227	Morgan, William, Balcurvie, Windygates.

CLASS 75. BARNEVELDER—Cockerel.

1st	No. 228	Binnie, W., Garth House, Denny.
2nd	No. 229	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.

CLASS 76. BARNEVELDER—Pullet.

1st	No. 231	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex.
2nd	No. 230	Binnie, W., Garth House, Denny.

CLASS 77. INDIAN GAME—Cock.

1st	No. 232	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 233	Black, William A. P., Croftfoot, Old Polmont.

CLASS 78. INDIAN GAME—Hen.

1st	No. 235	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 234	Argo, Fred, Bructor, Inverurie.

CLASS 79. INDIAN GAME—Cockerel.

1st	No. 237	Black, William A. P., Croftfoot, Old Polmont.
2nd	No. 236	Argo, Fred, Bructor, Inverurie.

CLASS 80. INDIAN GAME—Pullet.

1st	No. 239	Black, William A. P., Croftfoot, Old Polmont.
2nd	No. 238	Argo, Fred, Bructor, Inverurie.

CLASS 81. OLD ENGLISH GAME—Cock.

1st	No. 241	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 240	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd	No. 242	Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.
V	No. 244	Slater, A., The Old Vicarage, Lythe, Whitby.
H	No. 243	Slater, A., The Old Vicarage, Lythe, Whitby.

CLASS 82. OLD ENGLISH GAME—Hen.

1st	No. 246	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 249	Slater, A., The Old Vicarage, Lythe, Whitby.
3rd	No. 250	Slater, A., The Old Vicarage, Lythe, Whitby.
V	No. 248	Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.
H	No. 247	Grant, Miss Beatrice, Coulmore, Kessock, Inverness.

CLASS 83. OLD ENGLISH GAME—Cockerel.

1st	No. 251	Belbin, C. N., Nortonthorpe Hall, Huddersfield.

CLASS 84. OLD ENGLISH GAME—Pullet.

1st	No. 252	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
V	No. 253	Russell, H. N. & H. T., Newton Holme, Kirkbride, Carlisle.

CLASS 85. BANTAM GAME—Old English—Cock.

1st	No. 254	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 256	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland.
3rd	No. 257	Morgan, William, Balcurvie, Windygates.
V	No. 255	Belbin, C. N., Nortonthorpe Hall, Huddersfield.

CLASS 86. BANTAM GAME—Old English—Hen.

1st	No. 258	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 259	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd	No. 260	Ellwood, Joseph W., Papcastle, Cockermouth.
V	No. 261	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland.
H	No. 262	Morgan, William, Balcurvie, Windygates.

CLASS 87. BANTAM GAME—Modern—Cock.

1st	No. 263	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
2nd	No. 265	Sandison, Alfred L., Bakery, Echt.
V	No. 264	Delaney & Son, Gateside, Fife.

CLASS 88. BANTAM GAME—Modern—Hen.

1st	No. 268	Dingwall, David, 137 St Clair Street, Kirkcaldy.
2nd	No. 266	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd	No. 267	Delaney & Son, Gateside, Fife.
V	No. 269	Sandison, Alfred L., Bakery, Echt.
H	No. 270	Sandison, Alfred L., Bakery, Echt.

CLASS 89. BANTAM—Other than Game—Cock.

1st	No. 278	Sandison, Alfred L., Bakery, Echt (Wyandotte).
2nd	No. 275	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Pekin, Black).
3rd	No. 276	Petrie, Alexander, Mayfield, Airth Station, Falkirk (Rhode Island Red).
V	No. 273	Ellwood, Joseph W., Papcastle, Cockermouth (Indian Game).
H	No. 272	Binnie, W., Garth House, Denny (Wyandotte).
C	No. 271	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Sussex, Speckled).

CLASS 90. BANTAM—Other than Game—Hen.

1st	No. 280	Binnie, W., Garth House, Denny (Wyandotte).
2nd	No. 282	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Pekin, Black).
3rd	No. 279	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Barnevelder).
V	No. 285	Sandison, Alfred L., Bakery, Echt (Pekin).
H	No. 284	Petrie, Alexander, Mayfield, Airth Station, Falkirk (Rhode Island Red).
C	No. 286	Sandison, Alfred L., Bakery, Echt (Wyandotte).

CLASS 91. BANTAM—Any Variety—Cockerel.

1st	No. 288	Delaney & Son, Gateside, Fife (Modern Game).
2nd	No. 289	Dingwall, David, 137 St Clair Street, Kirkcaldy (Game, Pile).
V	No. 287	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Old English Game).

CLASS 92. BANTAM—Any Variety—Pullet.

1st	No. 290	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Old English Game).
2nd	No. 291	Binnie, W., Garth House, Denny (Wyandotte).
V	No. 292	Delaney & Son, Gateside, Fife (Modern Game).

CLASS 93. ANY OTHER RECOGNISED BREED OF POULTRY —Cock.

1st	No. 300	M'Vicar, Daniel, Burnside Cottage, Lennoxtown (Polish, Buff).
2nd	No. 299	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Polish, Buff-laced).
3rd	No. 296	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Old English Pheasant Fowl).
V	No. 295	Dent, John J., Whitehall, Maybole (Ancona).
H	No. 297	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cochin, White).
C	No. 298	Grant-Peterkin, M., Grange Hall, Forres (Jubilee Game).
C	No. 293	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Croad, Langshan).

CLASS 94. ANY OTHER RECOGNISED BREED OF POULTRY —Hen.

1st	No. 307	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Polish, Buff-laced).
2nd	No. 303	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Modern Langshan).
3rd	No. 305	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cochin, White).
V	No. 308	M'Vicar, Daniel, Burnside Cottage, Lennoxtown (Polish, Buff).
H	No. 304	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Old English Pheasant Fowl).
C	No. 306	Grant-Peterkin, M., Grange Hall, Forres, (Jubilee Game).

CLASS 95. ANY OTHER RECOGNISED BREED OF POULTRY —Cockerel.

1st	No. 311	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Polish, Buff-laced).
2nd	No. 309	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Old English Pheasant Fowl).

CLASS 96. ANY OTHER RECOGNISED BREED OF POULTRY —Pullet.

1st	No. 313	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Cochin, White).
2nd	No. 314	Hough-Watson, H., Braystones House, Beckermet, Cumberland (Polish Silver-laced).
V	No. 312	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Old English Pheasant Fowl).

UTILITY POULTRY.

CLASS 97. LEGHORN—Any Variety—Cock or Cockerel.

1st	No. 315	Binnie, W., Garth House, Denny (Cock, White).
2nd	No. 320	Rodger, David, Bonnyton Farm, Eaglesham (Cock, White).
3rd	No. 319	Reid, David, Firthview, Portgordon (Cockerel, White).
V	No. 321	Wilson, Ludovic, Thorn Farm, Dollar (Cock, White).
H	No. 318	Munro, R. J., Fodderty Lodge Poultry Farm, Dingwall (Cockerel, White).
C	No. 317	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Cock, White).

CLASS 98. ANY OTHER VARIETY—Light Breed— Cock or Cockerel.

1st	No. 322	Binnie, W., Garth House, Denny (Cock, Minorca).
2nd	No. 323	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Cock, Welsummer).
V	No. 324	Petrie, Alexander, Mayfield, Airth Station, Falkirk (Cock, Welsummer).

CLASS 99. WYANDOTTE—Any Colour—Cock or Cockerel.

1st	No. 325	Argo, Fred, Bructor, Inverurie (Cock, White).
2nd	No. 330	Rodger, David, Bonnyton Farm, Eaglesham (Cock, White).
3rd	No. 326	Binnie, W., Garth House, Denny (Cock, White).
V	No. 329	Reid, David, Firthview, Portgordon (Cockerel, White).
H	No. 327	Cameron, Mrs Allan, Darris, Dores, Inverness (Cock, White).

CLASS 100. ANY OTHER VARIETY—Heavy Breed— Cock or Cockerel.

1st	No. 334	Binnie, W., Garth House, Denny (Cock, Barnevelder).
2nd	No. 340	Wallace, William, Monkrigg Mains, Haddington (Cock, Rhode Island Red).
3rd	No. 333	Argo, Fred, Bructor, Inverurie (Cock, Sussex).
V	No. 341	Wilson, Ludovic, Thorn Farm, Dollar (Cock, Plymouth Rock).
H	No. 336	Mechie, John, Upper Greens, Auchtermuchty (Cock, Dorking).
C	No. 337	Paul, H. D., Munlochy Mains, Munlochy (Cock, Rhode Island Red).

CLASS 101. LEGHORN—White—Hen or Pullet.

1st	No. 342	Binnie, W., Garth House, Denny (Hen).
2nd	No. 346	Reid, David, Firthview, Portgordon (Pullet).
3rd	No. 345	Reid, David, Firthview, Portgordon (Hen).
V	No. 343	Munro, R. J., Fodderty Lodge Poultry Farm, Dingwall (Hen).
H	No. 344	Munro, R. J., Fodderty Lodge Poultry Farm, Dingwall (Pullet).

CLASS 102. LEGHORN—Any other Colour—Hen or Pullet.

1st	No. 348	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Hen, Black).
2nd	No. 350	Reid, D. N., Tullich, Lochcarron (Hen, Exchequer).
3rd	No. 349	Penny, James G., Sauchie Poultry Farm, Crieff (Hen, Black).
V	No. 347	Fotheringham, W. G., Westerton, Blackford (Hen, Brown).

CLASS 103. WYANDOTTE—Any Colour—Hen or Pullet.

1st	No. 354	Binnie, W., Garth House, Denny (Hen, White).
2nd	No. 353	Argo, Fred, Bructor, Inverurie (Hen, White).
3rd	No. 357	Reid, David, Firthview, Portgordon (Pullet, White).
V	No. 352	Argo, Fred, Bructor, Inverurie (Hen, White).
H	No. 358	Rodger, David, Bonnyton Farm, Eaglesham (Hen, White).
C	No. 355	Grant-Peterkin, M., Grange Hall, Forres (Pullet, White).

CLASS 104. RHODE ISLAND RED—Hen or Pullet.

1st	No. 360	Morgan, William, Balcurvie, Windygates (Hen).
2nd	No. 364	Wallace, William, Monkrigg Mains, Haddington (Hen).
3rd	No. 362	Penny, James G., Sauchie Poultry Farm, Crieff (Hen).
V	No. 363	Petrie, Alexander, Mayfield, Airth Station, Falkirk (Hen).
H	No. 361	Munro, R. J., Fodderty Lodge Poultry Farm, Dingwall (Pullet).

CLASS 105. BARNEVELDER—Hen or Pullet.

1st	No. 365	Binnie, W., Garth House, Denny (Hen).
2nd	No. 367	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen).
V	No. 366	Cameron, Mrs Allan, Darris, Dores, Inverness (Hen).

CLASS 106. ROCK—Any Colour—Hen or Pullet.

1st	No. 370	Wilson, Ludovic, Thorn Farm, Dollar (Hen, Barred).
2nd	No. 368	Grant, Norman M., Mill Lane Poultry Farm, Copthorne, Sussex (Hen, White).
V	No. 369	Penny, James G., Sauchie Poultry Farm, Crieff (Pullet, Buff).

CLASS 107. ANY OTHER VARIETY—Hen or Pullet.

1st	No. 377	Morgan, William, Balcurvie, Windygates (Hen, Sussex, Light).
2nd	No. 371	Binnie, W., Garth House, Denny (Hen, Minorca).
3rd	No. 375	Macgregor, James Scott, Bridgend Bakery, Greenlaw (Hen, Minorca).
V	No. 376	Mechie, John, Upper Greens, Auchtermuchty (Hen, Dorking).
H	No. 373	Dent, John J., Whitehall, Maybole (Hen, Ancona).
C	No. 372	Cowans, James, Deneville, Wooler (Hen, Jersey White Giant).

CLASS 108. ANY CROSS FOR LAYING PURPOSES—Hen.

1st	No. 381	Grant-Peterkin, M., Grange Hall, Forres.
2nd	No. 380	Cameron, Mrs Allan, Darris, Dores, Inverness.

CLASS 109. ANY CROSS FOR LAYING PURPOSES—Pullet.

1st	No. 383	Grant-Peterkin, M., Grange Hall, Forres.
2nd	No. 384	Grant-Peterkin, M., Grange Hall, Forres.
3rd	No. 385	Penny, James G., Sauchie Poultry Farm, Crieff.
V	No. 382	Argo, Fred, Bructor, Inverurie.

CLASS 110. DUCKS—Aylesbury—Drake.

1st	No. 388	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 389	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
3rd	No. 386	Argo, Fred, Bructor, Inverurie.

CLASS 111. DUCKS—Aylesbury—Duck.

1st	No. 391	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 390	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 112. DUCKS—Aylesbury—Drake (Young).

1st	No. 393	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 392	Argo, Fred, Bructor, Inverurie.
V	No. 394	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 113. DUCKS—Aylesbury—Duck (Young).

1st	No. 396	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 397	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 395	Argo, Fred, Bructor, Inverurie.

CLASS 114. DUCKS—Orpington—Drake.

1st	No. 399	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 400	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 398	Cameron, Mrs Allan, Darris, Dores, Inverness.

CLASS 115. DUCKS—Orpington—Duck.

1st	No. 402	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 401	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 116. DUCKS—Orpington—Drake (Young).

1st	No. 403	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 404	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 117. DUCKS—Orpington—Duck (Young).

1st	No. 405	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 406	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 118. DUCKS—Indian Runner—Drake.

1st	No. 407	Argo, Fred, Bructor, Inverurie.
2nd	No. 409	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
3rd	No. 411	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 408	Argo, Fred, Bructor, Inverurie.
H	No. 412	Stewart, William C., Aultmore, Keith.

CLASS 119. DUCKS—Indian Runner—Duck.

1st	No. 413	Argo, Fred, Bructor, Inverurie.
2nd	No. 417	Shewan, Alexander, Longhillock, Alves, Forres.
3rd	No. 415	Belbin, C. N., Nortonthorpe Hall, Huddersfield.
V	No. 418	Stewart, William C., Aultmore, Keith.
H	No. 414	Argo, Fred, Bructor, Inverurie.

CLASS 120. DUCKS—Any other Variety—Drake.

1st	No. 420	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Muscovy).
2nd	No. 419	Argo, Fred, Bructor, Inverurie (Muscovy).

CLASS 121. DUCKS—Any other Variety—Duck.

1st	No. 422	Macpherson, Robert, Drumboy, Darvel (Rouen).
2nd	No. 421	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland (Muscovy).

CLASS 122. GEESE—Gander.

1st	No. 423	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom, Cumberland.
2nd	No. 426	Shewan, Alexander, Longhillock, Alves, Forres.
3rd	No. 424	Grant, Mrs Norman, Green World, Copthorne, Sussex.
V	No. 425	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 123. GEESE—Goose.

1st	No. 427	Grant, Mrs Norman, Green World, Copthorne, Sussex.
2nd	No. 429	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 428	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 124. TURKEYS—Cock.

1st	No. 433	Rottenburg, F. A., of Lochlane, Crieff.
2nd	No. 431	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
3rd	No. 430	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
V	No. 432	Cross, Sir William, Bart., of Scatwell, Muir of Ord.

CLASS 125. TURKEYS—Hen.

1st	No. 434	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
2nd	No. 436	Rottenburg, F. A., of Lochlane, Crieff.
3rd	No. 437	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 435	Cross, Sir William, Bart., of Scatwell, Muir of Ord.

TABLE POULTRY.

CLASS 126. TABLE FOWLS—Any Pure Breed—Cock.

1st	No. 439	Belbin, C. N., Nortonthorpe Hall, Huddersfield (Indian Game).
2nd	No. 440	Binnie, W., Garth House, Denny (Wyandotte, White).
V	No. 438	Argo, Fred, Bructor, Inverurie (Game).

CLASS 127. TABLE FOWLS—Any Pure Breed—Cockerel.

1st	No. 442	Binnie, W., Garth House, Denny (Wyandotte, White).
2nd	No. 443	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Orpington, Buff).
3rd	No. 444	Mechie, John, Upper Greens, Auchtermuchty (Dorking).
V	No. 441	Argo, Fred, Bructor, Inverurie (Indian Game).

CLASS 128. TABLE FOWLS—Any Cross—Cock.

1st	No. 445	Black, William A. P., Croftfoot, Old Polmont (Sussex Cross).

CLASS 129. TABLE FOWLS—Any Cross—Cockerel.

1st	No. 446	Black, William A. P., Croftfoot, Old Polmont (Sussex Cross).

CLASS 130. TABLE FOWLS—Any Pure Breed or Cross—Pair of Pullets.

1st	No. 451	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Indian Game—Sussex).
2nd	No. 447	Argo, Fred, Bructor, Inverurie (Wyandotte—Leghorn).
3rd	No. 450	Grant-Peterkin, M., Grange Hall, Forres (Jubilee Game—Sussex).
V	No. 452	Mechie, John, Upper Greens, Auchtermuchty (Dorking).
H	No. 449	Cameron, Mrs Allan, Darris, Dores, Inverness (Orpington Buff).
C	No. 448	Black, William A. P., Croftfoot, Old Polmont (Sussex Cross).

EGGS

CLASS 1. One Dozen HEN EGGS, white.—PREMIUMS, £1, 15s., and 10s.

1st	No. 10	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
2nd	No. 8	Guthrie, David W., Jesmond, Bridge of Earn.
3rd	No. 18	Stratton, Miss Isa A., Meadowmore, Methven.
V	No. 15	Murray, Miss Margaret B., Garth House, Castletown, Caithness.
H	No. 4	Bonnyman, John M., Clochan, Banffshire.
C	No. 16	Ramage, Mrs James, Lathallan Dairy, Polmont, Falkirk.
C	No. 17	Robertson, Mrs M., Middle Poultry Farm, Buttergask, Blackford.

CLASS 2. One Dozen HEN EGGS, brown or tinted.—PREMIUMS, £1, 15s., and 10s.

1st	No. 42	Tinker, Charley, Kilmartin, Inverness.
2nd	No. 41	Shanks, Miss M., Broomhill, Denny.
3rd	No. 40	Robertson, Mrs M., Middle Poultry Farm, Buttergask, Blackford.
V	No. 36	Maxwell, Mrs M., Thurdistoft, Thurso.
H	No. 21	Black, Miss Isa, Croftfoot, Polmont.
C	No. 22	Bonnyman, John M., Clochan, Banffshire.
C	No. 38	Murray, Miss Margaret B., Garth House, Castletown, Caithness.

CLASS 3. One Dozen DUCK EGGS.—PREMIUMS, £1, 15s., and 10s.

1st	No. 48	Muir, Mrs T., Hilderston Hill Farm, Bathgate.
2nd	No. 47	Muir, Thomas, Ballencrieff Poultry Farm, Bathgate.
3rd	No. 46	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
V	No. 44	Duncan, Mrs M. A., Langhowe Farm, Spey Bay.
H	No. 43	Black, Miss Isa, Croftfoot, Polmont.
C	No. 49	Ramage, Mrs James, Lathallan Dairy, Polmont, Falkirk.

CLASS 4. One Dozen TURKEY EGGS.—PREMIUMS, £1, 15s., and 10s.

1st	No. 50	Andrew, Mrs Jessie, South Tulloford, Oldmeldrum.
2nd	No. 51	Duncan, Mrs M. A., Langhowe Farm, Spey Bay.
3rd	No. 54	Matheson, Miss Margaret C., The Insch, Avoch.
H	No. 53	Fotheringham, W. G., Westerton, Blackford.

FUR-PRODUCING RABBITS

First Premium—Fifteen Shillings. Second Premium—Ten Shillings. Third Premium—Five Shillings. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded; where there are ten or more entries a Fourth Prize of 2s. 6d. may be awarded.

Champion Silver Medal *for best exhibit in the Rabbit Classes.*

No. 3 Forrest, Miss B. M., Kingencleugh House, Mauchline.

CLASS 1. ANGORA, over 5 months.

1st No. 1 Graham, Mrs E. Balfour, Levenbank, Leven (Buck).

CLASS 2. ANGORA, not exceeding 5 months.

(No entry.)

CLASS 3. CHINCHILLA—Buck, over 5 months.

1st No. 3 Forrest, Miss B. M., Kingencleugh House, Mauchline.
2nd No. 5 Wilson, Alexander S. K., Meadow Park, Winchburgh.
3rd No. 4 Todd, Mrs M., Kenilworth, Lauder.

CLASS 4. CHINCHILLA—Doe, over 5 months.

1st No. 10 Wilson, Alexander S. K., Meadow Park, Winchburgh.
2nd No. 6 Blane, John, 10 Hill Street, Kilmarnock.
3rd No. 7 M'Crimmon, Mrs Jessie, Meadowside, Stonehouse, Lanarkshire.
H No. 8 Taylor, Mrs B., Strathmill, Keith.
C No. 9 Taylor, Mrs B., Strathmill, Keith.

CLASS 5. CHINCHILLA—Buck or Doe, not exceeding 5 months.

1st No. 16 Wilson, Alexander S. K., Meadow Park, Winchburgh (Buck).
2nd No. 14 M'Crimmon, Mrs Jessie, Meadowside, Stonehouse, Lanarkshire (Buck).

CLASS 6. BEVEREN, over 5 months.

1st No. 19 Garland, James, 11 Viewforth Street, Kirkcaldy (Doe).
2nd No. 17 Dall, Andrew, 78 Kidd Street, Kirkcaldy (Buck).
3rd No. 18 Duthie, A., 19 Derby Street, Dundee (Buck).
V No. 20 Gunn, Alexander, Jun., 41 Argyle Square, Wick (Buck).

CLASS 7. BEVEREN, not exceeding 5 months.

2nd No. 21 MacGregor, Robert, Inchstelly Cottages, Alves (Doe).

CLASS 8. REX, any Colour, over 5 months.

1st	No. 26	Graham, Mrs E. Balfour, Levenbank, Leven (Doe—Chinchilla, Grey).
2nd	No. 23	Bell, Daniel, 87 Northgate, Peebles (Buck—Chinchilla, Dark Grey).
3rd	No. 28	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik.
V	No. 27	Graham, Mrs E. Balfour, Levenbank, Leven (Doe—Silver Squirrel).
H	No. 24	Bell, Daniel, 87 Northgate, Peebles (Doe—Havana, Brown).

CLASS 9. REX, any Colour, not exceeding 5 months.

1st	No. 29	Bell, Daniel, 87 Northgate, Peebles (Buck—Chinchilla, Light Grey).

CLASS 10. HAVANA, over 5 months.

1st	No. 30	Blane, John, 10 Hill Street, Kilmarnock (Buck).
2nd	No. 32	Scott & Ketchen, 63 Northgate, Peebles (Buck).
C	No. 31	Rankin, Alexander S., Blackhills, Lhanbryde, Morayshire (Buck).

CLASS 11. SABLE MARTEN, over 5 months.

1st	No. 33	Gordon, Mrs M. M., Denside House, Arbirlot, Angus (Buck).
2nd	No. 35	Ritchie, Ebenezer, 15 Hepburn Street, Dundee (Buck).
V	No. 34	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik.

CLASS 12. SABLE MARTEN, not exceeding 5 months.

1st	No. 36	Aird, Robert, 10 Somerset Road, Ayr (Buck).
2nd	No. 37	Todd, Mrs M., Kenilworth, Lauder (Buck).
V	No. 38	Todd, Mrs M., Kenilworth, Lauder (Buck).

CLASS 13. SABLE SIAMESE, over 5 months.

1st	No. 39	Graham, Mrs E. Balfour, Levenbank, Leven (Buck).
2nd	No. 40	Michie, Miss L., Rockleaze, Baldwin Crescent, Kirkcaldy (Buck).
V	No. 41	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik.

CLASS 14. SABLE SIAMESE, not exceeding 5 months.

1st	No. 42	Duthie, A., 19 Derby Street, Dundee (Buck).
2nd	No. 43	Ritchie, Ebenezer, 15 Hepburn Street, Dundee (Buck).

CLASS 15. SQUIRREL, over 5 months.

1st	No. 44	Cessford, Miss R. L., Lugton House, Dalkeith (Doe).
2nd	No. 45	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik.

CLASS 16. SILVER FOX, any Colour, over 5 months.

1st	No. 48	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik (Silver).
2nd	No. 46	Kilgour, Miss Peggy, St Leonard's Rabbitry, Dunfermline (Buck—Blue).
3rd	No. 47	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik (Silver).
V	No. 49	Ritchie, Ebenezer, 15 Hepburn Street, Dundee (Doe—Silver).

CLASS 17. SILVER FOX, any Colour, not exceeding 5 months.

1st	No. 50	Bonsor, R. B., 62 High Street, Peebles (Doe—Blue).
2nd	No. 51	Duthie, A., 19 Derby Street, Dundee (Buck—Black and White).

CLASS 18. Any Variety, over 5 months, for which a Class is not provided.

1st	No. 54	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik (Smoke Pearl).
2nd	No. 56	Todd, Mrs M., Kenilworth, Lauder (Doe—New Zealand Red).
3rd	No. 55	Pickard, Mrs C. L. and Dr J. N., The Cottage, Carlops, Penicuik (Opal).
V	No. 52	Blane, John, 10 Hill Street, Kilmarnock (Buck—Silver Grey).

CLASS 19. Any Variety, not exceeding 5 months, for which a Class is not provided.

1st	No. 57	Blane, John, 10 Hill Street, Kilmarnock (Buck—Havana).
2nd	No. 58	Bonsor, R. B., 62 High Street, Peebles (Doe—Smoke Beige).

HONEY, &c.

OPEN CLASSES.

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association *to the First and Second winners of the greatest number of points in the Classes for Honey and Wax only, calculated on the following bases : 1st Prize, 3 points ; 2nd Prize, 2 points ; 3rd Prize, 1 point.*

Silver Medal—Scott, George, Waterton Cottage, Old Cumnock (19 points).

Bronze Medal—Brown, Thomas C., Helenslea, St Ninians, Stirling (18 points).

Championship Cup, value £5, 5s. This Cup has been gifted by the Rev. John Beveridge, M.B.E., B.D., Edinburgh.

Scott, George, Waterton Cottage, Old Cumnock (19 points).

CLASS 1. Collection of APPLIANCES suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit.—PREMIUMS, 20s., 15s., and 10s.

1st No. 1 Steele, R., & Brodie, Bee Appliance Works, Wormit.

CLASS 2. Best and most complete FRAME HIVE for general use, with any improvements. Unpainted.—Premiums, 20s., 15s., and 10s.

1st No. 4 Moffat, David, Marion Terrace, Manse Road, Wishaw.
2nd No. 5 Ogilvie, J. & A., 369 Union Street, Aberdeen.
3rd No. 3 Kilgour, James D., 88 St Leonard's Street, Dunfermline.
V No. 2 Durward, John, Priestland, Darvel, Ayrshire.
C No. 6 Steele, R., & Brodie, Bee Appliance Works, Wormit.

CLASS 3. Best and most complete HIVE. Unpainted. Price not to exceed 35s.—PREMIUMS, 20s., 15s., and 10s.

2nd No. 8 Durward, John, Priestland, Darvel, Ayrshire.

CLASS 4. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., and 10s.

1st No. 10 Allan, George C., 7 Springvale Road, Ayr.
2nd No. 16 Scott, George, Waterton Cottage, Old Cumnock.
3rd No. 12 Duguid, Robert, Station House, Portsoy.
V No. 11 Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 5. Six Sections of HEATHER HONEY.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 19	Elliot, Matthew, 42 Ardconnel Street, Inverness.
2nd	No. 21	Pritchard, George H., Firth View, Beauly.
3rd	No. 18	Duguid, Robert, Station House, Portsoy.
V	No. 22	Scott, George, Waterton Cottage, Old Cumnock.
H	No. 17	Brown, Thomas C., Helenslea, St Ninians, Stirling.
C	No. 20	MacKenzie, D. R., Achnagairn, Kirkhill, Inverness-shire.

CLASS 6. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 24	Brown, Thomas C., Helenslea, St Ninians, Stirling.
2nd	No. 28	Scott, George, Waterton Cottage, Old Cumnock.
3rd	No. 26	Lobban, Mrs W. G., Burnbank Apiary, Alford.
V	No. 25	Duguid, Robert, Station House, Portsoy.
H	No. 23	Allan, George C., 7 Springvale Road, Ayr.

CLASS 7. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 30	Brown, Thomas C., Helenslea, St Ninians, Stirling.
2nd	No. 33	Smith, William W., Sunnybrae Lodge, Walkerburn.
3rd	No. 32	Scott, George, Waterton Cottage, Old Cumnock.
V	No. 31	Duguid, Robert, Station House, Portsoy.
H	No. 29	Allan, George C., 7 Springvale Road, Ayr.
C	No. 34	Watt, Charles, Teaninich Distillery, Alness, Ross-shire.

CLASS 8. Six Jars of PRESSED HEATHER HONEY in liquid form, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 40	Scott, George, Waterton Cottage, Old Cumnock.
2nd	No. 39	Pate, Thomas, Hopefield, Milnathort.
3rd	No. 41	Smith, William W., Sunnybrae Lodge, Walkerburn.
V	No. 36	Burn, William, 15 Haggersgate, Whitby.
H	No. 38	Lobban, Mrs W. G., Burnbank Apiary, Alford.
C	No. 35	Brown, Thomas C., Helenslea, St Ninians, Stirling.
C	No. 37	Duguid, Robert, Station House, Portsoy.

CLASS 9. Six Jars of GRANULATED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 45	Duguid, Robert, Station House, Portsoy.
2nd	No. 46	Lobban, Mrs W. G., Burnbank Apiary, Alford.
3rd	No. 43	Brown, Thomas C., Helenslea, St Ninians, Stirling.
V	No. 42	Allan, George C., 7 Springvale Road, Ayr.
H	No. 44	Cumming, James A., North Middlemuir, Methlick.
C	No. 47	Pate, Thomas, Hopefield, Milnathort.

CLASS 10. Two Shallow Frames of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 52	Scott, George, Waterton Cottage, Old Cumnock.
2nd	No. 49	Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 11. PRODUCTS made with the aid of Honey. (Recipe to be attached, which will be treated as confidential.)—PREMIUMS, 20s., 15s., and 10s.

V	No. 53	Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 12. Best display of HONEY in any form suitable for a shop window in space of 4 feet by 4 feet. Weight of Honey not to exceed 40 lb.—PREMIUMS, 60s., 30s., and 20s.

1st	No. 56	Duguid, Robert, Station House, Portsoy.
2nd	No. 54	Allan, George C., 7 Springvale Road, Ayr.
3rd	No. 55	Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 13. Best exhibit of not less than 1 lb. of WAX in any form.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 57	Brown, Thomas C., Helenslea, St Ninians, Stirling.
2nd	No. 58	Duguid, Robert, Station House, Portsoy.
3rd	No. 61	Munro, J. D., Wester Elchies, Aberlour.

CLASS 14. Bext exhibit of not less than 1 lb. of WAX made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 64	Duguid, Robert, Station House, Portsoy.
2nd	No. 67	Munro, J. D., Wester Elchies, Aberlour.
3rd	No. 63	Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 15. OBSERVATORY HIVE, with Queen and Bees—two or more Frames.—PREMIUMS, 50s., 30s., and 20s.

2nd	No. 69	Duguid, Robert, Station House, Portsoy.
V	No. 68	Brown, Thomas C., Helenslea, St Ninians, Stirling.

CLASS 16. OBSERVATORY HIVE, with Queen and Bees—one frame, no super.—PREMIUMS, 40s., 30s., and 15s.

1st	No. 73	Pritchard, George H., Firth View, Beauly.
2nd	No. 70	Duguid, Robert, Station House, Portsoy.

CONFINED TO SCOTTISH EXHIBITORS.

CLASS 17. One Standard Frame of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 74	Allan, George C., 7 Springvale Road, Ayr.

CLASS 18. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 76	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 78	Duguid, Robert, Station House, Portsoy.
3rd	No. 77	Brown, Thomas C., Helenslea, St Ninians, Stirling.
V	No. 82	Scott, George, Waterton Cottage, Old Cumnock.
H	No. 83	Ure-Panton, W., Clydesdale Bank House, Milnathort.

CLASS 19. Six Sections of HEATHER HONEY.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 84	Allan, George C., 7 Springvale Road, Ayr.
2nd	No. 89	Scott, George, Waterton Cottage, Old Cumnock.
3rd	No. 85	Duguid, Robert, Station House, Portsoy.
V	No. 88	Pritchard, George H., Firth View, Beauly.
C	No. 86	Elliot, Matthew, 42 Ardconnel Street, Inverness.
C	No. 87	MacKenzie, D. R., Achnagairn, Kirkhill, Inverness-shire.

CLASS 20. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 93	Scott, George, Waterton Cottage, Old Cumnock.
2nd	No. 91	Brown, Thomas C., Helenslea, St Ninians, Stirling.
3rd	No. 90	Allan, George C., 7 Springvale Road, Ayr.
V	No. 92	Duguid, Robert, Station House, Portsoy.
H	No. 94	Smith, William W., Sunnybrae Lodge, Walkerburn.

CLASS 21. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 102	Scott, George, Waterton Cottage, Old Cumnock.
2nd	No. 100	Lobban, Mrs W. G., Burnbank Apiary, Alford.
3rd	No. 97	Brown, Thomas C., Helenslea, St Ninians, Stirling.
V	No. 96	Allan, George C., 7 Springvale Road, Ayr.
H	No. 99	Duguid, Robert, Station House, Portsoy.

DAIRY PRODUCE

CLASS 1. POWDERED BUTTER, not less than 3 lb.—PREMIUMS, £4, £2, and £1.

1st	No. 2	Fleming, Andrew, Threepland, Eaglesham.
2nd	No. 4	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
3rd	No. 7	Stratton, Miss Isa A., Meadowmore, Methven, Perthshire.

CLASS 2. FRESH BUTTER, three 1-lb. lots, to be made up in form of bricks.—PREMIUMS, £4, £2, and £1.

1st	No. 12	Monteith, Mrs Helen, The Island, Bothkennar, Falkirk.
2nd	No. 10	Fleming, Andrew, Threepland, Eaglesham.
3rd	No. 15	Stratton, Miss Isa A., Meadowmore, Methven, Perthshire.
H	No. 11	M'Lachlan, Mrs, East Crookedstone, Quarter, Hamilton.
C	No. 14	Shanks, Miss M., Broomhill, Denny.

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards.—PREMIUMS, £9, £5, £3, £2, and £1.

1st	No. 20	M'Dowall, George, South Boreland, Dunragit.
2nd	No. 21	M'Harg, John, Barbeth, Leswalt, Stranraer.
3rd	No. 23	Milroy, James, Chapelton, Borgue, Kirkcudbright.
4th	No. 22	M'Minn, Samuel, Torrs Dairy, Kirkcudbright.
5th	No. 25	Paterson, Joseph, Crofts Dairy, Crossmichael, Castle Douglas.

CLASS 4. CHEESE, 14 lb. and under.—PREMIUMS, £5, £3, £2, and £1.

1st	No. 28	M'Dowall, George, South Boreland, Dunragit.
2nd	No. 29	M'Harg, John, Barbeth, Leswalt, Stranraer.
3rd	No. 30	M'Minn, Samuel, Torrs Dairy, Kirkcudbright.
4th	No. 32	Paterson, Joseph, Crofts Dairy, Crossmichael, Castle Douglas.

WOOL

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be from sheep bred and reared on, or regular stock of, exhibitor's farm, and, with the exception of Dorset Horn Lamb Wool, must be shorn in the year of the Show.

PURE BREED CLASSES.

CLASS 1. BLACKFACE WOOL—EWE. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 2 Thompson, William, Elibank, Walkerburn.
2nd No. 3 Thompson, William, Elibank, Walkerburn.
3rd No. 4 Thompson, William, Elibank, Walkerburn.

CLASS 2. BLACKFACE WOOL—HOGG. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 7 Thompson, William, Elibank, Walkerburn.
2nd No. 8 Thompson, William, Elibank, Walkerburn.
3rd No. 5 Graham, Andrew, Auchengassel, Twynholm.

CLASS 3. CHEVIOT WOOL—EWE. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 10 Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
2nd No. 14 Thompson, William, Elibank, Walkerburn.
3rd No. 15 Thompson, William, Elibank, Walkerburn.

CLASS 4. CHEVIOT WOOL—HOGG. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 17 Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
2nd No. 16 Gunn, Captain James W., of Banniskirk, Halkirk, Caithness.
3rd No. 20 Thompson, William, Elibank, Walkerburn.

CLASS 5. BORDER LEICESTER WOOL—EWE. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 23 Templeton, T. & M., Sandyknowe, Kelso.
2nd No. 22 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 6. BORDER LEICESTER WOOL—HOGG. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 24 Templeton, T. & M., Sandyknowe, Kelso.
2nd No. 25 Templeton, T. & M., Sandyknowe, Kelso.

CLASS 7. HALF-BRED WOOL—EWE. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 26 Brown, John C., Hundalee, Jedburgh.

CLASS 8. HALF-BRED WOOL—HOGG. Three Fleeces.—PREMIUMS, £3, £2, and £1.

1st No. 27 Brown, John C., Hundalee, Jedburgh.

CLASS 9. OXFORD DOWN WOOL—EWE. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 28	Malcolm, William M., of Softlaw, Kelso.
2nd	No. 29	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 10. OXFORD DOWN WOOL—HOGG. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 32	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 31	Malcolm, William M., of Softlaw, Kelso.
3rd	No. 33	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 11. SUFFOLK WOOL—EWE. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

2nd	No. 34	Riddell, D., Peaston, Ormiston.

CLASS 12. SUFFOLK WOOL—HOGG. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 37	Rintoul, William, Pratis, Leven.
2nd	No. 36	Riddell, D., Peaston, Ormiston.

CLASS 13. DORSET HORN WOOL—EWE. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 39	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
2nd	No. 40	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
V	No. 38	Bruce, Lord, Broomhall, Dunfermline.

CLASS 14. DORSET HORN WOOL—LAMB. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 42	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.
2nd	No. 41	Bruce, Lord, Broomhall, Dunfermline.
3rd	No. 43	Elgin and Kincardine, The Earl of, C.M.G., Broomhall, Dunfermline.

Special Prizes *to be awarded for Shetland Wool actually grown in Shetland.* —Premiums, £3, £2, and £1.

1st	No. 60	Tait, Andrew, Vementry, Bixter, Shetland.
2nd	No. 52	Tait, Andrew, Vementry, Bixter, Shetland.
3rd	No. 51	Sandison, Ian E. M., Houlland, Baltasound, Shetland.

CLASS 15. SHETLAND WOOL—EWE. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 45	Campbell, Mrs, Dolphinton House, Dolphinton.
2nd	No. 46	Campbell, Mrs, Dolphinton House, Dolphinton.
3rd	No. 52	Tait, Andrew, Vementry, Bixter, Shetland.
V	No. 47	Campbell, Mrs, Dolphinton House, Dolphinton.

CLASS 16. SHETLAND WOOL—HOGG. Three Fleeces.—

PREMIUMS, £3, £2, and £1.

1st	No. 55	Campbell, Mrs, Dolphinton House, Dolphinton.
2nd	No. 56	Campbell, Mrs, Dolphinton House, Dolphinton.
3rd	No. 57	Campbell, Mrs, Dolphinton House, Dolphinton.
V	No. 60	Tait, Andrew, Vementry, Bixter, Shetland.

RURAL INDUSTRIES

OPEN CLASSES.

SHETLAND KNITTING.

(Exhibits made from Shetland Wool.)

CLASS 1. FINE LACE GOODS.—Premiums, £3, £2, and £1.

1st	No. 2	Cluness, Mrs A. T., Muness, Uyeasound, Shetland (Scarf).
2nd	No. 5	Gifford, Mrs L., Lerquoy, Uyeasound, Shetland (Scarf).
3rd	No. 14	Smith, Miss Mary J., Phail, Westing, Uyeasound, Shetland (Shawl).
V	No. 7	Johnson, Mrs Charlotte, Balliasta, Baltasound, Lerwick (Shawl).
H	No. 8	Johnston, Mrs P., Sea View, Baltasound, Shetland (Scarf).
C	No. 1	Bruce, Mrs J. M., Uyeasound, Lerwick (Scarf).
C	No. 12	Sinclair, Mrs Edward, Mid Ayre, Uyeasound, Shetland (Shawl).

CLASS 2. DRESS, JUMPER, SPORTS COAT, CARDIGAN, or WAISTCOAT—one or more Colours.—Premiums, £3, £2, and £1.

1st	No. 22	Brown, Miss M. J., Kingland, Ollaberry, Lerwick (Jumper).
2nd	No. 33	Hughson, Mrs M., Dandies, Uyeasound, Lerwick (Jumper).
3rd	No. 35	Jacobson, Miss Joey, Stonydale, Bridge of Walls, Shetland (Dress).
V	No. 24	Dalziel, Miss Agnes, Tait's Buildings, Commercial Road, Lerwick (Jumper).
H	No. 26	Garrick, Miss Eliza H., Helendale, Lerwick (Waistcoat).
C	No. 36	Jacobson, Miss Maggie W., Stonydale, Bridge of Walls, Shetland (Waistcoat).
C	No. 27	Garrick, Miss Jessie M., Hestensetter, Wester Skeld, Lerwick (Jumper).

CLASS 3. DRESS, JUMPER, SPORTS COAT, CARDIGAN, or WAISTCOAT—all over Fair Isle.—Premiums, £3, £2, and £1.

1st	No. 75	Smith, Miss M. H., Troswick, Dunrossness, Shetland (Jumper).
2nd	No. 57	Garriock, Thomas J., Funzie, Fettar, Shetland (Jumper).
3rd	No. 66	Peterson, Miss Elizabeth, Bunidale, Vidlin, Shetland (Jumper).
V	No. 82	Williamson, Mrs C. J., Blacksness House, Scalloway (Jumper).
H	No. 60	Jamieson, Miss B. A., Gritquoy, Uyeasound, Lerwick (Jumper).
C	No. 83	Williamson, Miss Laura, Houll, Mid Yell, Shetland (Jumper).
C	No. 73	Sinclair, Mrs Mary, Kettletoft, Sanday, Orkney (Jumper).

CLASS 4. OTHER EXHIBITS.—PREMIUMS, £2, £1, and 10s.

1st	No. 96	Smith, Miss Ruby A., Scatlands, West Sandwick, Shetland (Shawl).
2nd	No. 98	Walker, The Hon. Mrs, Kingsmills, Inverness (Hose).
3rd	No. 92	Johnson, Miss Annie M., Mossbank, Shetland (Scarf and Bag Set).
V	No. 100	Williamson, Miss Grace, Stonefield, Cunningsburgh, Shetland (Scarf).
H	No. 87	Hay, Mrs George, The Bungalow, Holmsgarth, Lerwick (Scarf).
C	No. 86	Garrick, Miss Jessie M., Hestensetter, Wester Skeld, Lerwick (Shawl).

TWEEDS.

CLASS 5. HARRIS or OTHER TWEEDS—Hand-spun, Hand-woven, and Vegetable-dyed.—PREMIUMS, £3, £2, and £1.

1st	No. 102	Macgregor, Robert, Paton Street, Inverness.
2nd	No. 106	Murray, Miss Margaret, Tressidy Hill, Lairg.
3rd	No. 101	Leitch, Mrs A., 13 Cairnbaan, Lochgilphead.

CLASS 6. TWEED—Mill-spun, Hand-woven.—PREMIUMS, £3, £2, and £1.

1st	No. 121	Ross, Mrs George K., Pittentrail, Rogart.
2nd	No. 118	Robertson, Mrs William, Acheilidh, Rogart.
3rd	No. 109	Biermann, Mrs L., Blairich, Rogart.
V	No. 122	Ross, Mrs George K., Pittentrail, Rogart.
H	No. 114	Macgregor, Robert, Paton Street, Inverness.
C	No. 111	Hogg, David, 10 High Street, Earlston, Berwickshire.

MISCELLANEOUS.

CLASS 7. HOME-MADE FLOOR RUG (WOOL).—PREMIUMS, £3, £2, and £1.

1st	No. 166	Roger, Miss Blanche K., Balgove, St Andrews.
2nd	No. 172	Sime, Mrs R. B., Church Place, Upper Largo, Fife.
3rd	No. 141	Graham, John B., Ulva Cottage, Tayvallich, Lochgilphead.
V	No. 129	Campbell, Mrs A. D., Stanstill, Wick.
H	No. 158	MacKean, Mrs, The Manse, Maryton, Montrose.
C	No. 162	Prestonkirk W.R.I., Prestonkirk, East Lothian.

CLASS 8. SPECIMEN OF EMBROIDERY—White (to be exhibited unwashed).—PREMIUMS, £3, £2, and £1.

1st	No. 178	Boyle, Mrs Patterson, Dungiven, Londonderry (Baby's Robe).
2nd	No. 179	Boyle, Mrs Patterson, Dungiven, Londonderry (Baby's Bib).
3rd	No. 192	Telfer, Miss I., Ottercaps, Kirkwhelpington, Newcastle-on-Tyne (Tea Cloth).
H	No. 193	Telfer, Miss I., Ottercaps, Kirkwhelpington, Newcastle-on-Tyne (Table Runner).

CLASS 9. SPECIMEN OF COLOURED EMBROIDERY—Silk or Cotton.—PREMIUMS, £3, £2, and £1.

1st	No. 195	Alexander, Miss E., Balmule, Dunfermline (Bag).
2nd	No. 208	Crawford, Miss B., Wester Lea, Murrayfield, Edinburgh (Tea Cosy).
3rd	No. 214	Henderson, Mrs A. H., Argaty, Doune, Perthshire (Bag).
H	No 226	Masson, Miss H. E., Cavers, Hawick (Chair Back).
C	No. 229	Paterson, Mrs James L., 64 High Street, Strichen (Bedspread).

CLASS 10. SPECIMEN OF COLOURED EMBROIDERY—Woolwork.—PREMIUMS, £3, £2, and £1.

1st	No. 246	Gourlay, Mrs W. R., Kenbank, Dalry, Kirkcudbrightshire (Top of Fire Screen).
2nd	No. 269	Winchester, Mrs A. E., The Manse, Arrochar (Panel).
3rd	No. 255	Macbeth, Miss Ann, High Bield, Patterdale, Penrith (Coverlet).
V	No. 261	Ogilvy, Miss Wedderburn, Inverisla, Alyth (Landscape).
C	No. 250	Hogg, Miss M. D., Mardrumko, Strone, Argyll (Table Scarf).
C	No. 268	Weir, Mrs E., Mill of Newe, Strathdon, Aberdeenshire (Fire Screen).

CLASS 11. LEATHER GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 277	Dunchurch and Thurlaston Women's Institute, Rugby.
2nd	No. 274	Dunchurch and Thurlaston Women's Institute, Rugby.
3rd	No. 270	Coulson, Miss Amy L., Leadgates, Whittington, Newcastle-on-Tyne.
V	No. 281	Macdonald, Mrs L., South Lodge, Lydgait, Haddington.
H	No. 271	Downing, Mrs H. H., Knotwood Farm, Stony Stratford, Bletchley.

CLASS 12. SPECIMEN OF LEATHER WORK OTHER THAN GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 291	Downing, Mrs H. H., Knotwood Farm, Stony Stratford, Bletchley (Tea Cosy).
2nd	No. 303	Wallace, Miss Agnes A., Balgreddan, Kirkcudbright (Handbag).
3rd	No. 298	Nodwell, Mrs M. S., Balgray, Mill Road, Yoker, Glasgow (Writing Case).

CLASS 13. SPECIMEN OF FURCRAFT.—PREMIUMS, £2, £1, and 10s.

1st	No. 305	Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).
2nd	No. 308	Macdonald, Mrs, Struy Inn, Beauly (Collar and Cuffs).
3rd	No. 307	Harper, Mrs M., 38 Mid Street, Keith, Banffshire (Tie).
V	No. 309	M'Gregor, Mrs, Caledonian Hotel, Fort-Augustus (Gloves).
H	No. 304	Dunchurch and Thurlaston Women's Institute, Rugby (Gloves).

CLASS 14. SPECIMEN OF HAND-PAINTED POTTERY.—Premiums, £2, £1, and 10s.

1st	No. 314	Downey, Miss Mary J., The Whins, Kilrenny, Anstruther (Placque).
2nd	No. 312	Blair, Mrs Catherine, Hoprig Mains, Macmerry (Vase).
3rd	No. 315	Downey, Miss Mary J., The Whins, Kilrenny, Anstruther (Vase).

CLASS 15. SPECIMEN OF BASKET-WORK (Raffia not eligible).—Premiums, £2, £1, and 10s.

1st	No. 329	Squires, Mrs E. N., 12 The Butts, Warwick (Shopping Basket).
2nd	No. 328	Hawkhead Mental Hospital, Glasgow (Wicker Vase).

CLASS 16. BEST COLLECTION OF VEGETABLE-DYED WOOLS.—Premiums, £2, £1, and 10s.

1st	No. 331	Murray, Miss Margaret, Tressidy Hill, Lairg.
2nd	No. 330	Leitch, Mrs A., 13 Cairnbaan, Lochgilphead.
3rd	No. 332	Smith, Miss Margaret J., Hill Cottage, Sandwick, Shetland.

CLASS 17. HOME-SPUN YARN—2-3 Cuts.—Premiums, £2, £1, and 10s.

1st	No. 338	Smith, Miss Dollina, Gunnister, Uyeasound, Shetland.
2nd	No. 339	Smith, Miss Mary J., Phail, Westing, Uyeasound, Shetland.
3rd	No. 335	Cluness, Mrs A. T., Muness, Uyeasound, Shetland.
H	No. 333	Cameron, Miss Laura, Letterwalton, Barcaldine, Connel, Argyll.
C	No. 337	M'Vicar, Mrs Neil, Chalmers Street (West), Ardrishaig.

CLASS 18. SPECIMEN OF FILET-LACE.—Premiums, £3, £2, and £1.

1st	No. 349	Winchester, Mrs A. E., The Manse, Arrochar.
2nd	No. 346	Leach, Mrs A. M. M., 18 Gayton Road, Harrow.
3rd	No. 347	Leach, Mrs A. M. M., 18 Gayton Road, Harrow.
C	No. 343	Crawford, Miss B., Wester Lea, Murrayfield, Edinburgh.

CONFINED CLASSES.

Open to Women's Rural Institutes and Members thereof in the whole of Scotland.

CLASS 19. SPECIMEN OF QUILTING.—Premiums, £3, £2, and £1.

1st	No. 350	Brown, Miss A. C., Dipple, Fochabers (Dressing Gown).
2nd	No. 354	Cheape, Mrs R., Tiroran, Isle of Mull (Quilt).
3rd	No. 356	Elgin and Kincardine, The Countess of, Broomhall, Dunfermline (Cot Quilt).
H	No. 362	Murray, Mrs A. B., Craigland, Dalbeattie (Cushion).

CLASS 20. ARTICLE SHOWING CHAIR-CANING.—PREMIUMS, £3, £2, and £1.

1st	No. 365	Paterson, Miss Margaret M., Glencripesdale, Acharacle, Argyll (Stool).
2nd	No. 366	Rankin, Mrs Mary, Mamore Cottage, Fort-William (Stool).

CLASS 21. UPHOLSTERED WORK-BOX.—PREMIUMS, £3, £2, and £1.

1st	No. 371	Maxwell, Mrs Margaret, Thurdistoft, Thurso.
2nd	No. 367	Burgess, Miss M. C. E., Viewville, Drumnadrochit, Inverness.
3rd	No. 370	M'Cutcheon, Miss J., Lochinch Castle, Stranraer.

CLASS 22. EMBROIDERED SHOPPING BAG.—PREMIUMS, £2, £1, and 10s.

2nd	No. 380	Weir, Mrs E., Mill of Newe, Strathdon, Aberdeenshire.
3rd	No. 378	Fraser-Mackenzie, Miss Beatrice A., Bunchrew House, Inverness-shire.

Confined to Women's Rural Institutes and Members thereof in the Northern and West Highland Areas of the Scottish Women's Rural Institutes.

CLASS 23. WOMEN'S STOCKINGS—4- or 5-Ply Fingering.—PREMIUMS, £2, £1, and 10s.

1st	No. 383	Grieve, Mrs R., Charlecote, Fort-William.
2nd	No. 382	Cameron, Miss Catherine, Aird View, Strath Gairloch, Ross-shire.
3rd	No. 391	Wilson, Mrs, Stockoulbie, Kilmartin, Argyll.
V	No. 386	Maclean, Miss Joan, 4 New Park, Callanish, Stornoway.
H	No. 389	Mouat, Miss Jemima A., Milton House, Weisdale, Shetland.
C	No. 387	Maclennan, Miss Annie, 1A New Park, Callanish, Stornoway.

CLASS 24. KNITTED JUMPER—4-Ply Fingering.—PREMIUMS, £2, £1, and 10s.

1st	No. 395	Ross, Mrs David, Inverernie, Daviot.
2nd	No. 392	Cairns, Miss Helen, House of Farr, Inverness.
3rd	No. 397	Sinclair, Mrs Mary, Kettletoft, Sanday, Orkney.
C	No. 399	Walker, Miss Catherine, House of Farr, Inverness.

CLASS 25. ARTICLE showing HOME-MADE APPLIQUE WORK (design need not be original, but work bought ready stamped and prepared will not be eligible).—PREMIUMS, £2, £1, and 10s.

1st	No. 400	Coulson, Mrs H. Petty, Abbeystone, Strone, Argyll (Nursery Curtains).

HORTICULTURAL SECTION

CLASS A. COLLECTION OF FLOWERS, PLANTS, SHRUBS, or VEGETABLES.

Gold Medal and £10.

No. 1 Dobbie & Co., Limited, Seedsmen and Nurserymen, Edinburgh.

Silver Medals.

No. 4 Forbes, John (Hawick), Limited, Buccleuch Nurseries, Hawick.
No. 5 Laird & Dickson, Pinkhill Nurseries, Edinburgh.
No. 7 Oliver & Hunter, Moniaive, Dumfriesshire.
No. 8 Allwood Brothers, Wivelsfield Nurseries, Haywards Heath, Sussex.
No. 10 Urquhart, F., & Co., Seed Merchants, Inverness.
No. 12 Storrie Thyne & Co., Limited, Downfield Nurseries, Dundee.

Very Highly Commended.

No. 2 Howden & Co., 54 High Street, Inverness.

CLASS B. FORMAL GARDENS or ROCK GARDENS.

Gold Medal and £10.

No. 13 Austin & M'Aslan, 91-95 Mitchell Street, Glasgow.

Silver Medals.

(None awarded.)

Commended.

No. 9 Edrom Nurseries, Edrom, Berwickshire.
No. 14 Young & Thomson, Braids Nursery, Braid Avenue, Edinburgh.

HORSE-SHOEING COMPETITION

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

THURSDAY, 23rd JUNE.

Gold Medal, given by National Master Farriers' and Blacksmiths' Association, *to be awarded to the competitor obtaining the highest number of points in Class* 1.

No. 17 M'Donald, Ian, Castlehill Smithy, Kintore.

Silver Tea Service, given by the Scottish Iron and Steel Co., Ltd., Glasgow, *to the winner of First Prize in Class* 1.

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize in Class* 1.

Gold Medal, given by the Mustad Horse Nail Company, *to the winner of Third Prize in Class* 1.

Gold Medal, given by the Capewell Horse Nail Company, *to the winner of Fourth Prize in Class* 1.

CLASS 1. FARM HORSES (Open Class). 1st Prize, £5 and Silver Tea Service; 2nd Prize, £5 and Canteen of Cutlery; 3rd Prize, £5 and Gold Medal; 4th Prize, £4 and Gold Medal; 5th Prize, £3; 6th Prize, £2; 7th Prize, £2; 8th Prize, £1; 9th Prize, £1.

1st	No. 17	M'Donald, Ian, Castlehill Smithy, Kintore.
2nd	No. 29	Duffy, John, The Smithy, Dunragit.
3rd	No. 8	Stephen, William, Balmellie Street, Turriff.
4th	No. 36	M'Donald, Alexander, 57 Eastgate, Inverness.
5th	No. 38	M'Donald, Robert, Hatton Fintray, Kinaldie.
6th	No. 14	Strachan, Ernest, Invereighty Smithy, Forfar.
7th	No. 28	Nicol, Alexander, Muir, Alford.
8th	No. 7	Duncan, James, Newburgh, Aberdeen.
9th	No. 10	Hilland, Robert, Stoneykirk, Stranraer.

FRIDAY, 24th JUNE.

Gold Watch, given by Messrs William Martin, Sons, & Co., Coatbridge, *to the winner of First Prize in Class* 2.

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize in Class* 2.

Gold Medal, given by the Mustad Horse Nail Company, *to the winner of Third Prize in Class* 2.

CLASS 2. FARM HORSES (Juniors under twenty-five years of age). —1st Prize, £5 and Gold Watch; 2nd Prize, £3 and Canteen of Cutlery; 3rd Prize, £2 and Gold Medal; 4th Prize, £1.

1st	No. 52	Mackay, George, Bridgend, Dunbeath, Caithness.
2nd	No. 45	Mackenzie, Thomas, Raddery Smithy, Fortrose.
3rd	No. 50	Nicol, F. J., Jun., Muir, Alford.
4th	No. 46	Beattie, George, Milton, Kildrummy, Mossat.

SHOE-MAKING COMPETITION

WEDNESDAY, 22nd JUNE.

1st Prize, £5; 2nd Prize, £4; 3rd Prize, £3;
4th Prize, £2; 5th Prize, £1.

1st	No. 20	Mackie, William C., Glasgoforest, Kinellar.
2nd	No. 23	Duncan, James, Newburgh, Aberdeen.
3rd	No. 10	Nicol, Alexander, Muir, Alford.
4th	No. 21	M'Donald, Ian, Castlehill Smithy, Kintore.
5th	No. 16	Fenton, Robert, Old Montrose, Montrose.

LIVE STOCK JUDGING COMPETITION

Open to all persons not exceeding 23 years of age at date of the Competition.

'Glasgow Herald' Challenge Cup, value £50, *to be awarded each year to the winning team in the Inter-College Contests.* Given by Messrs George Outram & Co., Ltd., Glasgow.

West of Scotland Agricultural College, 270 points.

Gold Medal *to be awarded to the highest individual scorer, irrespective of whether the winner is or is not a College Entrant.* Given by Messrs George Outram & Co., Ltd., Glasgow.

Mitchell, William, West of Scotland Agricultural College, Auchincruive, Ayr MacIntosh, Peter, Strageath Hall, Muthill.	equal, 60 points.

(*On this occasion two medals were awarded.*)

INDIVIDUAL COMPETITION.

PREMIUMS, £5, £4, £3, £2, and £1.

1st } equal	Mitchell, William, West of Scotland Agricultural College, Auchincruive, Ayr	60 points
2nd }	MacIntosh, Peter, Strageath Hall, Muthill	60 ,,
3rd	Wilson, John M., West of Scotland Agricultural College, Auchincruive, Ayr	58 ,,
4th } equal	M'Intyre, Miss Agnes S., West of Scotland Agricultural College, Auchincruive, Ayr	56 ,,
5th }	Miller, John R., Mid Kelton, Castle Douglas	56 ,,

TEAM COMPETITION.

1st Prize, £10 and 5 Medium Silver Medals.

WEST OF SCOTLAND AGRICULTURAL COLLEGE.

Mitchell, William, West of Scotland Agricultural College, Auchincruive, Ayr	60 points
Wilson, John M., West of Scotland Agricultural College, Auchincruive, Ayr	58 ,,
M'Intyre, Miss Agnes S., West of Scotland Agricultural College, Auchincruive, Ayr	56 ,,
Pate, Robert, West of Scotland Agricultural College, Auchincruive, Ayr	54 ,,
Corkill, Miss Florence E., West of Scotland Agricultural College, Auchincruive, Ayr	42 ,,
	270 ,,

2nd Prize, £5 and 5 Medium Bronze Medals.

WEST PERTHSHIRE YOUNG FARMERS' CLUB.

MacIntosh, Peter, Strageath Hall, Muthill	60 points
MacIntosh, Archie, Strageath Hall, Muthill	50 ,,
M'Laren, James R., Fintalich, Muthill	50 ,,
Reid, John, East Lundie, Doune	44 ,,
Bayne, Alexander, Crofthead, Auchterarder	42 ,,
	246 ,,

Special Prize for College Team placed highest in Competition, £5.

West of Scotland Agricultural College, 270 points.

BUTTERMAKING COMPETITIONS

CHAMPIONSHIP CLASS.

Gold Medal.

No. 22 Reed, Miss D. E. H., Broadwood Farm, Frosterley, Co. Durham.

Silver Medal.

No. 29 Stratton, Miss Mary A., Meadowmore Farm, Methven.

OPEN CLASS—FIRST SECTION.

PREMIUMS, £5, £3, £2, and £1.

1st	No. 4	Adam, Miss Mary M., Burmieston, Methven.
2nd	No. 1	Corkill, Miss F. E., Ballamenagh Farm, Baldrine, Isle of Man.
3rd	No. 5	Cullen, Miss Mary M., Mollandhu, Cardross.
4th equal	No. 6	Morrison, Miss E. M., Mill of Wardes, Insch.
	No. 7	Brown, Miss M. W., Cloag Farm, Methven.
V	No. 3	Williams, Frank I., Inverlair Lodge, Tulloch, Inverness.

OPEN CLASS—SECOND SECTION.

PREMIUMS, £5, £3, £2, and £1.

1st	No. 15	Potter, Miss Margaret, Crossgreen Farm, Uphall.
2nd equal	No. 11	Prentice, Miss Jenny W., Craigrie, Clackmannan.
3rd	No. 13	MacKenzie, R. Ewen, Redcroft, West Kilbride.
4th	No. 21	Howard, Charles P., 187 Queen Victoria Drive, Glasgow.
V	No. 16	Addison, Miss Jean, Ballingall Mill, Leslie.
H	No. 18	Reid, Miss E. M., 270 Woodlands Road, Glasgow.
C	No. 14	Murdoch, Miss Mary, Over Benchil, Stanley.

OPEN CLASS—THIRD SECTION.

PREMIUMS, £5, £3, £2, and £1.

1st	No. 29	Stratton, Miss Mary A., Meadowmore Farm, Methven.
2nd	No. 22	Reed, Miss D. E. H., Broadwood Farm, Frosterley, Co. Durham.
3rd	No. 31	Wright, Miss K., Greenbank, Temple Sowerby, Penrith, Carlisle.
4th	No. 30	Taylor, Miss Mary I., Burnside of Lethen. Nairn.
V	No. 25	Addison, Miss Isabella, Ballingall Mill, Leslie.

NOVICE CLASS—FIRST SECTION.

PREMIUMS, £3, £2, and £1.

1st	No. 39	M'Kay, Miss Rance S., 3 Tay Terrace, Broughty Ferry.
2nd	No. 36	Lean, Miss Mary Y., Mains of Kilavoch, Gollanfield.
3rd	No. 47	Johnson, Arthur F., 30 Craigie Road, Ayr.
V	No. 35	MacLean, Miss Doris, Newmore Farm, Inverness.
H	No. 37	Smith, Miss C. M., Hardhill, Croy, Gollanfield.

NOVICE CLASS—SECOND SECTION.

PREMIUMS, £3, £2, and £1.

1st equal	No. 33	Williams, Frank I., Inverlair Lodge, Tulloch, Inverness.
2nd equal	No. 49	Reid, Miss E. M., 270 Woodlands Road, Glasgow.
3rd	No. 42	Taylor, Miss Mary I., Burnside of Lethen, Nairn.
V	No. 43	Addison, Miss Isabella, Ballingall Mill, Leslie.
H	No. 48	Wilson, John M., Caylands Farm, Balfron.
C	No. 46	King, Mis C. W., Bowfield Farm, Uplawmoor, Glasgow.

NOVICE CLASS—THIRD SECTION.

PREMIUMS, £3, £2, and £1.

1st	No. 55	Robertson, Sydney, Hope Lodge, Bridge of Weir.
2nd	No. 57	Steell, Hugh M., Shaw Farm, Kilmaurs, Ayrshire.
3rd	No. 51	Howard, Charles P., 187 Queen Victoria Drive, Glasgow.
V	No. 54	MacKenzie, Miss Mary, Holme Rose, Croy, Gollanfield.

NEW IMPLEMENTS

The Judges, having inspected the new implements submitted for competition, have awarded the Society's Silver Medal to the following :—

Harrison, M'Gregor & Co., Ltd., Leigh, Lancashire—Mowing Machine (No. 396).
Marshall, John, Ferryhills Poultry Farm, North Queensferry—Telescopic Poultry Unit (No. 1590).

JUDGES.

Shorthorn—W. F. M'Laren, Estates Office, Polmaise, Stirling.

Aberdeen-Angus—A. W. Howison, Lochbank, Blairgowrie.

Galloway—James Carson, Barwhillanty Farm, Parton.

Belted Galloway—J. R. Miller, Mid Kelton, Castle Douglas.

Highland Cattle—John A. Cameron, Glenfintaig, Templeland Road, Corstorphine.

Ayrshire—John Young, Mouswald Grange, Ruthwell.

British Friesian — John Brown, Hedges Farm, St Albans, Herts.

Red Poll—Walter R. Burrell, Knepp Castle, Horsham, Sussex.

Fat Cattle—Walter Biggar, Grange Farm, Dalbeattie.

Dairy Cow: Gold Cup — William Burkitt, M.Sc., Grange Hill, Bishop Auckland.

Clydesdale Stallions and Colts—Andrew Renwick, Grindon, Norham, Northumberland.

Clydesdale Geldings—William Brown, Craigton, Bishopton.

Clydesdale Mares and Fillies—Robert Mackay, Bruchag, Rothesay.

Hunters—James J. Paterson, Terrona, Langholm.

Highland and Western Island Ponies—John M. Macdonald, Whitfield, West Linton.

Shetland Ponies—Graham Clark, Ashbank, Maberly Street, Aberdeen.

Saddle Classes—James J. Paterson, Terrona, Langholm.

Blackface Males, excluding Tup Lambs—L. D. M'Laren, Touchmollar, Cambusbarron, Stirling.

Blackface Females and Tup Lambs—T. M. Macmillan, Glencrosh, Moniaive.

Cheviot—John S. Dickson, Horsburgh Castle, Peebles.

North Country Cheviot—John B. Sproat, Lennox Plunton, Borgue.

Border Leicester — John Kinnaird, Papple, Haddington.

Half-Bred — James H. Mauchlin, Blakelaw, Kelso.

Oxford Down—John T. Eady, Pytchley Lodge, Kettering.

Suffolk—W. C. Jackson, Fowlmere, Royston, Herts.

Shropshire—C. L. Coxon, Milton, Pembridge, near Leominster.

Dorset Horn—R. E. Bennett, Cheselbourne, Dorchester.

Fat Sheep—James H. Mauchlin, Blakelaw, Kelso.

Goats—Mrs G. M. Soames, Long Buckby Wharf, Rugby.

Large White Pigs—C. L. Coxon, Milton, Pembridge, near Leominster.

Poultry—H. Inman, 12 Squire Lane, Girlington, Bradford—Classes 1 to 10, 15 to 18, 49 to 52, 73 to 76, 85 to 92, 97 to 109; John Meikle, Camregan, Girvan—Classes 11 to 14, 19 to 34, 61 to 72, 126 to 130; H. S. Anthony, Euxton, Chorley, Lancashire—Classes 35 to 48, 53 to 60, 77 to 84, 93 to 96, 110 to 125.

Eggs—Alexander F. Smith, Ardmohr, East Calder.

Fur-Producing Rabbits—Harry Tarbox, 20 Little Church Street, Rugby.

Honey, &c.—W. E. Hamlin, 3 St Mark's Place, Wimbledon, Surrey.

Dairy Produce—Alexander Garvie, c/o A. Clement & Sons, Ltd., 64 Albion Street, Glasgow, C.1.

Buttermaking—William Smith, Naldera, Colinton; William Burkitt, M.Sc., Grange Hill, Bishop Auckland.

Wool—William Duncan, Forthside, Lennox Row, Trinity, Edinburgh.

Rural Industries—David Forbes, High Street, Inverness—Classes 1, 2, 3, 4, 16, 17, 23, 24; J. A. Campbell, of Campbell & Co., Beauly—Classes 5, 6; Miss D. Angus, Gray's School of Art, Aberdeen—Classes 7, 8, 9, 10, 18, 19, 22, 25; Miss M. B. Fulton, Occupational Therapy Department, Royal Mental Hospital, Aberdeen—Classes 11, 12, 14, 15, 20, 21; Mrs E. Balfour Graham, Levenbank, Leven—Class 13.

Horse-Shoeing—Major William Logan, O.B.E., Doonbank, Inverness; J. J. Hamilton, Brooklyn, Twynholm; John Bell, Lochside Place, Oban.

Shoe-Making—J. J. Hamilton, Brooklyn, Twynholm; John Bell, Lochside Place, Oban.

Horticulture—John T. Jeffrey, 19 Morningside Park, Edinburgh.

ATTENDING MEMBERS.

Shorthorn.—*J. P. Ross-Taylor, Alexander Clark,* John Calder, John H. Gair.

Aberdeen-Angus.—*James M'Laren, Thomas Elder, William Henderson,* Lieut.-Colonel J. Grant Smith, George Douglas (Calcots).

Galloway.—*John Hewetson, Charley Tinker,* Sir Hector Mackenzie, Bart., W. S. MacWilliam.

Belted Galloway.—*Colonel Robert W. Walker,* Hugh G. Johnston.

Highland.—*Archibald Whyte, Provost Donald Macdonald,* Councillor William Michie, James Maxwell.

Ayrshire. — *Thomas Templeton, Ralph S. M'William,* Donald Junor, James Cameron.

British Friesian.—*Robert Park, Lieut.-Colonel M. J. Grant-Peterkin,* John Fraser, G. Smith Laing, M.B.E.

Red Poll.—*John W. Prentice,* Ian Forsyth.

Fat Cattle. — *William Meiklem,* William H. Gill.

Dairy Cow: Gold Cup.—*Alexander Forbes,* Robert Davies, James L. M'Donald.

Clydesdale Stallions and Colts. —*Captain John MacGillivray, Walter Mundell,* W. Anderson, Bailie Archibald Smith, James Tulloch.

Clydesdale Geldings.—*Major A. D. Campbell,* Alexander Clark, George Douglas (Arboll).

Clydesdale Mares, Fillies and Foals. — *Robert Miller, Commander H. D. Dunbar-Rivers,* A. B. Davidson, David R. Cran, Major G. D. Keith Murray, M.C.

Hunters.—*Colonel F. J. Carruthers, Major Robert W. Sharpe,* James W. Gunn, W. MacBean.

Highland and Western Island Ponies.—*J. E. Kerr, Hon. T. G. P. Corbett,* Peter D. Robertson, Captain John Stirling.

Shetland Ponies.—*James Kilpatrick, D. A. MacLennan,* C. W. Mundell, Errington Ross.

Saddle Classes.—*Colonel F. J. Carruthers, Major Robert W. Sharpe,* James W. Gunn, W. MacBean.

Blackface Males, excluding Tup Lambs.—*The Hon. Walter T. H. Scott, Master of Polwarth,* Angus M'Donald, J. H. Fraser.

Blackface Females and Tup Lambs.—*Charles F. Tulloch,* George Clyne, W. J. Cameron.

Cheviot.—*P. O. Turnbull,* John MacLennan, William Harley, William Munro.

North Country Cheviot. — *Falconer L. Wallace,* Gideon Rutherford, George J. Grant.

Border Leicester. — *Major S. Strang Steel,* William Fraser, A. Campbell.

Half-Bred. — *Captain John C. Stewart,* William K. Wattie.

Oxford Down.—*T. Mercer Sharp,* William Robertson.

Suffolk.—*James Scott,* Bailie A. A. Noble.

Shropshire.—*John M. Roger,* Bailie J. S. Fraser.

Dorset Horn.—*John M. Roger,* Bailie J. S. Fraser.

Fat Sheep. — *Captain John C. Stewart,* William K. Wattie.

Goats.—*John Robson, Jun.,* James D. Cameron, Frank A. Middleton.

Large White Pigs.—*John M. Roger,* Bailie J. S. Fraser.

Poultry.—*Dr J. F. Tocher,* Bailie B. G. Hoare.

Eggs.—*Andrew Pollock,* W. A. Scott Clyne.

Fur-Producing Rabbits. — J. MacKessack Leitch, Mrs Allan Cameron.

Honey.—A. Aikman Blair.

Dairy Produce.—*Andrew Pollock,* W. A. Scott Clyne.

Buttermaking.—*Alexander Forbes,* Miss J. Macdonald.

Wool.—*Dr R. Stewart MacDougall,* James Macdonald.

Rural Industries.—Mrs Allan Cameron, Mrs R. D. Cameron, Miss Isabella Brown, John G. S. Flett, Peter Maxwell.

Horse-Shoeing.—*John E. B. Cowper, Ralph S. M'William, James Scott,* Charles M'Donald, Simon M'Donald, Thomas M'Kenzie.

Horticultural Section.—George King, James G. Barclay.

VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1932.

Silver Medals were awarded to the following :—

GLASGOW VETERINARY COLLEGE.

Junior Anatomy	Robert N. C. Aitken, Blantyre.
Chemistry (equal)	James Bolton, Lennoxtown. John J. Murdoch, Glasgow.
Biology	Robert N. C. Aitken, Blantyre.
Senior Anatomy	John M'Lintock, Kilmacolm.
Physiology	Duncan M. M'Intyre, Kinloch Rannoch.
Zootechny	Allan H. Muir, Newmilns.
Materia Medica	John W. Macaulay, Glasgow.
Pathology	David Harkness, Lanark.
Hygiene	John W. Macaulay, Glasgow.
Surgery	Adam Gibb, Motherwell.
Medicine	Adam Gibb, Motherwell.

12 Large Silver Medals, £11, 2s. 0d.

ROYAL (DICK) VETERINARY COLLEGE.

Junior Anatomy	W. M. Brownlie, Oban.
Chemistry	P. J. Wilson, Eddleston.
Biology	S. T. Harris, Weymouth.
Senior Anatomy	A. Robertson, B.Sc., Stonehaven.
Physiology	A. Robertson, B.Sc., Stonehaven.
Zootechny	J. A. M'Kinnon, Lochmaben.
Materia Medica	J. S. S. Inglis, B.Sc., Hawick.
Pathology	J. M'P. Fraser, Auldearn.
Hygiene	J. S. S. Inglis, B.Sc., Hawick.
Surgery	J. P. Pickering, Hexham.
Medicine	J. P. Pickering, Hexham.

11 Large Silver Medals, £10, 3s. 6d.

DISTRICT COMPETITIONS, 1932.

25	Districts	—17 Grants of £12 each; 1 of £11, 15s.; 1 of £11, 10s.; 1 of £11, 5s.; 1 of £11; 1 of £10, 5s.; 2 of £10; and 1 of £4, 13s. 9d.	£284	8	9
13	,,	Grants of £15 each	195	0	0
28	,,	Special Grants: Medals, £18, 2s. 4d.	243	12	4
		Medals for Shows (51 large)	47	3	6
		Premium and Medals for Cottages, Gardens, &c.	3	8	0
42	,,	Medals for Hoeing Competitions, 1931-32	16	5	6
185	,,	Medals for Ploughing, 1931-32	92	10	0
Long Service Certificates, £40, 1s.; Gold Medals, £55, 11s. 6d.; and Silver Medals, £45, 13s. 6d. (1931-32)			141	6	0
			£1023	14	1

ABSTRACT OF PREMIUMS.

District Competitions	£882	8	1
Long Service Awards	141	6	0
Veterinary Colleges (23 Medals)	21	5	6
	£1044	19	7

HUNDREDTH SHOW, EDINBURGH, 1931.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to foaling, the following changes have taken place in the list of animals for which prizes were awarded:—

HORSES.

DRAUGHT MARES.

CLASS 87. YELD MARE, born before 1928.—PREMIUMS, £20, £12, £8, £4, and £2.

1st	No. 745	**Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Nadine."**
2nd	No. 747	**Murdoch, Alexander, East Hallside, Hallside, Lanarkshire, "Fyvie Primrose."**
3rd	No. 743	**Brown, William Watson, Muirhouse, Stow, "Celanese" (58,411).**
4th	No. 732	**Jack, David, Middleton, Balbeggie, Perth, "Middleton Moss Rose" (57,618).**
*	No. 744	**Gibb, James, Lochtyside, Thornton, Fife, "Lochtyside Peggy" (55,298).**
5th	No. 746	**Martin, John, Letham, Mid-Calder, "Carrie."**

The animal failing to qualify is marked thus (*).

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1932

I. British Government Securities—		
£19,300 War Loan Assented Stock, 1929-47, at 98		£18,914 0 0
£1,679, 13s. 4d. 2½ per cent Consolidated Stock, at 74½		1,251 7 0
£8,000 4½ per cent Conversion Stock, at 108 x.d.		8,640 0 0
£6,200 3 per cent Local Loans, at 87		5,394 0 0
£4,000 3½ per cent Conversion Stock, at 98½		3,940 0 0
		£38,139 7 0
II. Heritable Bonds—		
£12,500 at Commissioner's Rates		12,500 0 0
III. Railway Debenture and Preference Stocks—		
£17,050 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 61½	£10,485 15 0	
£11,554 Do. do. 4 per cent do., at 80½	9,300 19 4	
£16,105 London Midland and Scottish Railway Co. 4 per cent Debenture Stock, at 90½	14,575 0 6	
£1,500 Do. do. 4 per cent Preference Stock, at 33½	502 10 0	
£703 Southern Railway Co. 4 per cent Debenture Stock, at 95½	671 7 4	
£450 Do. do. 5 per cent Preference Stock, at 66½	299 5 0	
£112 Do. do. 5 per cent Guaranteed Stock, at 101½	113 13 8	
		35,948 10 10
IV. Bank Stocks—		
£5,150 0 0 Royal Bank of Scotland, at 413	£21,269 10 0	
£2,218 16 5 Bank of England, at 320	7,100 4 6	
£1,110 13 4 Bank of Scotland, at 413	4,587 1 0	
2,850 "B" Shares, Barclays Bank, at 63s.	8,977 10 0	
		41,934 5 6
V. Colonial Government Stocks—		
£2,500 Dominion of Canada Registered 3½ per cent Stock (1930-50), at 100	£2,500 0 0	
£2,500 New South Wales Inscribed 5 per cent Stock (1935-55), at 100	2,500 0 0	
£2,500 Natal Inscribed 3½ per cent Stock (1914-39), at 100	2,500 0 0	
£2,000 Western Australia Inscribed 4 per cent Stock (1942-62), at 99	1,980 0 0	
£2,000 New Zealand Government 5 per cent Inscribed Stock (1946), at 106	2,120 0 0	
£1,120 Victorian Government 3½ per cent Inscribed Stock (1929-49), at 91	1,019 4 0	
		12,619 4 0
Carry forward		£141,141 7 4

	£	s.	d.	£	s.	d.
Brought forward				£141,141	7	4
VI. Annuity Stock—						
£32 Edinburgh and Leith Corporation Gas Commissioners, at 26				832	0	0
VII. Estimated Value of Building— 8 Eglinton Crescent	£5,000	0	0			
VIII. Estimated Value of Furniture, Paintings, Books, &c.	1,500	0	0			
				6,500	0	0
IX. Arrears of Subscriptions considered recoverable				352	7	6
X. Balances at 30th November 1932				1,132	13	2
Amount of General Funds				£149,958	8	0
XI. Special Funds—						
Tweeddale Gold Medal Fund—						
On Current Account—Heritable Loan repaid				£500	0	0
£100 3 per cent Local Loans Stock, at 87				87	0	0
Sum on Deposit Receipt with British Linen Bank				20	13	0
				£607	13	0
Fife and Kinross Perpetual Gold Challenge Cup Fund—						
£268 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 61½	£164	16	5			
£201 Do. do. 4 per cent First Guaranteed Stock, at 60½	121	12	1			
Sum on Deposit Receipt with British Linen Bank	41	6	3			
				327	14	9
Paisley Perpetual Gold Challenge Cup Fund—						
£802 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 61½	£493	4	7			
Sum on Deposit Receipt with British Linen Bank	89	16	7			
				583	1	2
Renfrewshire Perpetual Gold Challenge Cup Fund—						
£668 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 61½	£410	16	5			
Sum on Deposit Receipt with British Linen Bank	82	18	5			
				493	14	10
William Taylor Memorial Prize Fund—						
£401 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 61½	£246	12	4			
Sum on Deposit Receipt with British Linen Bank	69	12	1			
				316	4	5
William Duthie Perpetual Silver Challenge Cup Fund— £260 2½ per cent Consolidated Stock, at 74½				193	14	0
The James Archibald Prize— £612, 1s. 6d. War Loan Assented Stock, at 98				599	16	8
Balances with British Linen Bank at 30th November 1932				116	4	7
Amount of Special Funds				£3,238	3	5

Edinburgh, 27*th December* 1932.—As Auditor of the Highland and Agricultural Society of Scotland, I have examined the Securities for the Investments as detailed in the above State of Funds and have found them in order. The Titles to the Heritable Estate and the Bonds for Sums lent on Heritable Security are certified by the Society's Law Agents to be in order.

GEO. JAMES GREGOR, C.A.

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*

Edinburgh, 4*th January* 1933.

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. Balances as at 30th November 1931				£689	3	5
2. Arrears of Subscriptions outstanding at 30th November 1931	£286	0	6			
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished	1	10	0	284	10	6
3. Interests and Dividends—						
(1) Interests—						
On Heritable Bonds, less Income-tax	£587	5	0			
On Railway Debenture and Preference Stocks, do.	1,267	12	6			
On Colonial Government Stocks, do.	382	18	4			
On Annuity Stock, do.	24	0	0			
On British Government Stocks, do. (including bonus on conversion of War Stock)	1,697	14	9			
On Temporary Loans, do.	6	16	11			
	£3,966	7	6			
(2) Dividends on Bank Stocks, less Income-tax	1,305	10	2	5,271	17	8
4. Subscriptions—						
Annual Subscriptions	£2,449	4	6			
Life Subscriptions	672	0	0	3,121	4	6
5. 'Transactions' Sales and Advertisements				28	10	10
6. Income-tax repaid for year to 5th April 1932				1,384	18	4
7. Balance of Receipts from 100th Show, Edinburgh, 1931				36	1	1
8. Balance of Receipts from former Shows				5	13	6
9. Receipts from Inverness Show, 1932				11,522	7	5
10. Warble Fly Investigation, 1931				250	0	0
11. N.D.D. Examination at Kilmarnock 1931—Refund of Expenses				245	17	2
12. Heritable Bond repaid				3,160	0	0
Sum of Charge				£26,000	4	5

Edinburgh, 27*th December* 1932.—As Auditor of the Highland and Agricultural
of the Society for the year ending 30th November 1932 and have found them to be
Accounts I have prepared an Account of Charge and Discharge of the Intromissions
1932, of which the above is an abstract.

Edinburgh, 4*th January* 1933.

AGRICULTURAL SOCIETY of SCOTLAND for Year 1931-1932.

DISCHARGE.

1. ESTABLISHMENT EXPENSES—		
Salaries and Wages and Allowance for Cleaning		£2,937 0 0
Allowances to Mrs Simpson, Mrs Cowie, and the late Mrs Brown		141 0 0
Feu-duty, £21, 17s. 7d.; Rates and Taxes, £87, 14s. 4d.		109 11 11
Coal, Gas, and Electric Light		55 15 9
Insurances, £55, 3s. 10d.; Special Annuity Premium, £51, 3s. 9d.; Telephone and Telegrams, £65, 5s. 5d.; Repairs and Furnishings, £36, 14s. 8d.		208 7 8
		£3,451 15 4
2. FEE to Auditor of Accounts for 1930-1931		120 0 0
3. EDUCATION—		
N.D.A. Examination	£59 12 6	
Forestry Examination	16 16 0	
		76 8 6
4. CHEMICAL DEPARTMENT—		
Fee to Chemist	£100 0 0	
Analyses for Members and Expenses	359 7 9	
		459 7 9
5. VETERINARY DEPARTMENT—Medals to Students		21 5 6
6. DAIRY DEPARTMENT—N.D.D. Examination, 1931		130 15 9
7. DAIRY DEPARTMENT, 1932—		
Expenses of N.D.D. Examination held at Ayr	£353 11 11	
Less Entry Fees	95 11 0	
		258 0 11
8. WARBLE FLY INVESTIGATION—		
Balance of Expenses, 1931	£209 8 4	
Expenses, to account, for 1932	18 7 6	
		227 15 10
9. DISCOLOURATION OF WOOL—Investigation Expenses for 1932		194 6 11
10. EXPENSES attending New Implement Trials		2 6 9
11. SOCIETY'S 'TRANSACTIONS'		1,519 6 5
12. ORDINARY Printing, £193, 18s. 9d.; Advertising, £51, 1s. 6d.; Stationery, Books, &c., £200, 10s 7d.; Postages and Receipt Stamps, £160		605 10 10
13. SALARY to Consulting Engineer		250 0 0
14. TEMPORARY Loan	£2,000 0 0	
Less Repaid	2,000 0 0	..
15. MISCELLANEOUS Payments		277 19 9
16. BALANCE of Expenses in connection with 100th Show, Edinburgh, 1931		54 10 0
17. EXPENSES in connection with Inverness Show, 1932—		
Premiums, £3552, 15s.; Medals, £67, 4s.; Expenses of Show, £11,124, 8s. 9d. (as per page 381)		14,744 7 9
18. PREMIUMS and Medals for Local Shows and District Competitions		641 6 0
19. CERTIFICATES and Medals for Long Service		163 1 0
20. EXPENSES in connection with visiting sites for future Shows and attending Meetings		72 13 9
21. SPECIAL GRANTS—		
Animal Diseases Research Association, £200; Glasgow Veterinary College, £100; Scottish Agricultural Organisation Society, £100; other Grants, £53, 3s.		453 3 0
22. NEW Property at No. 8 Eglinton Crescent—		
Payments to Account of Contract Work, &c.		660 11 0
23. ARREARS removed from Subscription List at 30th November 1932		130 11 0
24. ARREARS of Subscriptions outstanding at 30th November 1932		352 7 6
25 BALANCES at 30th November 1932—		
On Account Current with Royal Bank of Scotland—		
Edinburgh Account	£956 0 9	
London Account	173 15 0	
	£1,129 15 9	
In hands of Secretary	2 17 5	
		1,132 13 2
SUM OF DISCHARGE		£26,000 4 5

Society of Scotland, I beg to report that I have examined the Books and Accounts correctly stated and sufficiently vouched and instructed. From the Books and of the Treasurer with the Funds of the Society for the year ending 30th November

GEO. JAMES GREGOR, C.A.

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*

ABSTRACT of the ACCOUNTS

CHARGE.

1. LOCAL SUBSCRIPTIONS—Town of Inverness				£52	10	0
2. AMOUNT COLLECTED DURING SHOW—						
Gates	£4,734	12	10			
Grand Stand	821	4	11			
Catalogues and Awards	333	0	11			
Tickets sold	18	9	6			
Motor Garage and Chauffeurs' Tickets	174	4	6			
Cloak-Rooms and Lavatories	64	12	2			
				6,146	4	10
3. FORAGE SOLD				5	5	7
4. RENT OF STALLS				4,202	4	0
5. RENT OF REFRESHMENT BOOTHS				490	0	0
6. ADVERTISEMENTS IN CATALOGUE AND PREMIUM LIST				290	3	0
7. SUBSCRIPTIONS IN AID OF PREMIUMS				327	10	0
8. MISCELLANEOUS				8	10	0
				£11,522	7	5
DEBIT BALANCE				3,222	0	4
				£14,744	7	9

Note.—To the debit balance of	£3,222	0	4
Add Premiums undrawn at 30th November 1932	173	5	0
	£3,395	5	4
From the above balance there falls to be deducted sums due by Exhibitors for fitting up of stands, &c., amounting to	140	12	11
Making the probable deficit	£3,254	12	5

EDINBURGH, 4*th January* 1933.

of the INVERNESS SHOW, 1932

DISCHARGE.

1. SHOWYARD—		
Fitting up of Showyard		£2,750 0 0
James Walker & Co.—Hire of Timber		2,378 15 0
Rosettes, £4, 12s. 6d.; Penning and Cartage Charges on Poultry and Rabbits, £49, 0s. 3d.; Horse-Shoeing, £11, 11s. 3d.; Buttermaking, £66, 8s. 2d	£131 12 2	
Hire of Sleepers and Cartage, £161, 7s. 8d.; Office Luggage, £16, 5s. 2d.; Toilet Requisites, &c., £7, 9s. 9d.; Miscellaneous, £6, 2s. 6d.	191 5 1	
		322 17 3
Salary to John Reid, Showyard Erector		500 0 0
		£5,951 12 3
2. FORAGE and Bedding for Stock		410 7 4
3. POLICE		154 19 9
4. TRAVELLING EXPENSES of Judges, Stewards, and Staff		435 17 2
5. HOTELS AND LUNCHEONS—		
Hotels for Directors, Stewards, and Judges	£347 10 3	
Luncheons in Showyard for Directors, Judges, Attending Members, Members of Committee, Pressmen, Staff (including accommodation), Breakfasts, and Teas	431 13 1	
		779 3 4
6. ASSISTANTS and Show Staff		595 14 4
7. MUSIC		163 4 0
8. PRINTING, Members' Badges, Stationery, &c.		1,279 16 10
9. ADVERTISING and Bill-posting		809 19 10
10. FORESTRY Exhibition, £40; Horticultural Section, £53, 17s. 3d.; Concert for Attendants, £1, 10s.		95 7 3
11. VETERINARY INSPECTOR		21 0 0
12. SHOW TREASURER		100 0 0
13. POSTAGES		126 17 0
14. POST OFFICE and Telephones		41 14 3
15. AMBULANCE		19 7 9
16. INSURANCE		64 14 6
17. MISCELLANEOUS		74 13 2
		£11,124 8 9
18. PREMIUMS drawn at 30th November 1932		3,619 19 0
		£14,744 7 9

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, ***Chairman.***
GEO. JAMES GREGOR, C.A., ***Auditor.***

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. **Funds as at 30th November 1931**—			
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock			£2,650 0 0
£5,551, 16s. 3d. 3½ per cent Conversion Stock			4,216 18 2
£500 Queensland 3½ per cent Inscribed Stock, 1950-70			450 1 0
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock			611 10 6
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock			259 1 11
			£8,187 11 7
Balance on Account Current with Royal Bank of Scotland			263 19 0
			£8,451 10 7
II. **Interest on Investments**—			
On £3193 London and North-Eastern Railway Company 3 per cent Debenture Stock, for year to 30th June 1932		£95 15 10	
Less tax		25 2 11	
		£70 12 11	
On £5551, 16s. 3d. 3½ per cent Conversion Stock, for year to 1st October 1932	£194 6 2		
Less tax	51 0 0	143 6 2	
On £500 Queensland 3½ per cent Inscribed Stock, 1950-70, for year to 30th June 1932	£17 10 0		
Less tax	4 11 10	12 18 2	
On £412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, for year to 30th June 1932	£16 9 6		
Less tax	4 6 6	12 3 0	
On £190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, for year to 30th June 1932	£7 12 0		
Less tax	1 19 11	5 12 1	
			244 12 4
III. **Income-tax** repaid for year to 5th April 1932			82 18 1
Sum of Charge			£8,779 1 0

Edinburgh, *4th January* 1933.

ARGYLL NAVAL FUND for the Year 1931-1932.

DISCHARGE.

I. Allowances to the following eight Recipients—

W. J. R. Campbell (ninth year)				£40	0	0
M. W. G. Webster (seventh year)				40	0	0
H. C. D. MacLean (sixth year)				20	0	0
J. H. Dundas (third year)				40	0	0
K. C. Grieve (third year)				40	0	0
D. B. N. Mellis (third year)				40	0	0
J. L. Hallewell (third year)				40	0	0
D. V. Hugonin (second year)				40	0	0
				£300	0	0

II. Miscellaneous—

Banks & Co.—Printing	£2	5	6			
Gavin A. Maxton—Rubber Stamp	0	3	0			
				2	8	6

III. Funds at 30th November 1932—

£3193 London and North-Eastern Railway Company 3 per cent Debenture Stock	£2,650	0	0			
£5551, 16s. 3d. 3½ per cent Conversion Stock	4,216	18	2			
£500 Queensland 3½ per cent Inscribed Stock, 1950-70	450	1	0			
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock	611	10	6			
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock	259	1	11			
	£8,187	11	7			

Note.—The above Funds are entered at cost price. The market value at 30th November 1932 was £8398, 10s. 11d.

Balance on Account Current with Royal Bank of Scotland	289	0	11			
				8,476	12	6
Sum of Discharge				£8,779	1	0

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*
GEO. JAMES GREGOR, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS
For the Year 1931-1932.

RECEIPTS.

1.	ANNUAL SUBSCRIPTIONS AND ARREARS received . . .			£2,250 16 6
2.	LIFE SUBSCRIPTIONS			672 0 0
3.	INTERESTS AND DIVIDENDS—			
	Interests		£3,966 7 6	
	Dividends		1,305 10 2	
				5,271 17 8
4.	'TRANSACTIONS'—Sales and Advertisements . . .			28 10 10
5.	INCOME-TAX repaid for year to 5th April 1932 . . .			1,384 18 4
6.	BALANCE OF RECEIPTS from 100th Show, Edinburgh, 1931 .			36 1 1
7.	BALANCE OF RECEIPTS from former Shows			5 13 6
8.	RECEIPTS from Inverness Show, 1932			11,522 7 5
9.	WARBLE FLY INVESTIGATION, 1931			250 0 0
10.	N.D.D. EXAMINATION at Kilmarnock 1931—Refund of Expenses			245 17 2
				£21,668 2 6

PAYMENTS.

1.	ESTABLISHMENT EXPENSES—			
	Salaries and Wages and Allowance for Cleaning		£2,937 0 0	
	Retiring Allowances		141 0 0	
	Feu-duty, Taxes, Coal, Gas and Electric Light, Insurance, Repairs and Furnishings		373 15 4	
			£3,451 15 4	
2.	FEE TO AUDITOR of Accounts, 1930-1931 . .		120 0 0	
3.	EDUCATION—N.D.A. and Forestry . . .		76 8 6	
4.	CHEMICAL DEPARTMENT		459 7 9	
5.	VETERINARY DEPARTMENT		21 5 6	
6	DAIRY DEPARTMENT—N.D.D. Examination, 1931 .		130 15 9	
7.	DAIRY DEPARTMENT—N.D.D. Examination, 1932 .		258 0 11	
8.	SOCIETY'S 'TRANSACTIONS'		1,519 6 5	
9.	WARBLE FLY INVESTIGATION, 1931 and 1932 .		227 15 10	
10.	DISCOLOURATION OF WOOL INVESTIGATION .		194 6 11	
11.	EXPENSES attending New Implement Trials .		2 6 9	
12.	ORDINARY Printing, Advertising, Stationery, Books, and Postages		605 10 10	
13.	SALARY to Consulting Engineer		250 0 0	
14.	MISCELLANEOUS Payments		277 19 9	
15.	BALANCE OF PAYMENTS on account of 100th Show, 1931		54 10 0	
16	PAYMENTS on account of Inverness Show, 1932—			
	1. Premiums and Medals . .	£3,619 19 0		
	2. Expenses . . .	11,124 8 9		
			14,744 7 9	
17.	PREMIUMS AND MEDALS for Local Shows and District Competitions		641 6 0	
18.	CERTIFICATES AND MEDALS for Long Service .		163 1 0	
19.	EXPENSES in connection with visiting Sites for future Shows and attending Meetings . .		72 13 9	
20.	SPECIAL GRANTS—			
	Animal Diseases Research Association, £200; Glasgow Veterinary College, £100; Scottish Agricultural Organisation Society, £100; other Grants, £53, 3s.		453 3 0	
				23,724 1 9
	BALANCE OF PAYMENTS . . .			£2,055 19 3

RALPH ANSTRUTHER, *Treasurer.*
ALEXANDER MURDOCH, *Chairman.*
GEO. JAMES GREGOR, C.A., *Auditor.*

EDINBURGH, *4th January* 1933.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 6TH APRIL 1932.

Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr Ian M. Campbell; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Robert Macmillan; Mr Alexander Murdoch; Mr Robert Park; Mr John M. Roger; Mr T. Mercer Sharp; Major Robert W. Sharpe; Mr John P. Sleigh; Major S. Strang Steel; Mr J. P. Ross-Taylor; Mr Thomas Templeton; Colonel Robert W. Walker; Mr Archibald Whyte. *Extraordinary Directors*—Hon. G. Corbett; Commander H. D. Dunbar-Rivers; Mr James Durno; Mr George Grant; Lieut.-Colonel M. J. Grant-Peterkin; Mr William Meiklem; Mr Walter Mundell; Mr Alexander Munro; Mr Andrew Pollock; Mr John W. Prentice; The Hon. Walter T. H. Scott; Mr Phipps O. Turnbull. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist*—R. Stewart MacDougall, M.A., D.Sc.

Vacancy on Board.

On behalf of the Ordinary Directors in the Perth Show Division, Mr Archibald Whyte, Spott, Kirriemuir, moved, and Mr John M. Roger, Balgove, St Andrews, seconded, that Mr William Henderson of Lawton, Coupar-Angus, be nominated at the General Meeting in June as an Ordinary Director, to fill the vacancy caused by the retirement of the Lord Scone, and this was agreed to.

Show of 1934.

A letter was read from the Town Clerk of Glasgow, conveying an invitation from the Corporation of Glasgow to hold the Show of 1934 in that City. The letter stated that the Corporation would be pleased to place at the disposal of the Society, for the purpose of the Show, a site at Bellahouston Park, where the 1925 Show was held, subject to the adjustment of appropriate conditions. The letter further stated that if the Corporation's invitation was accepted, they would, as on the occasion of the last Show held in the City, contribute a sum of 500 Guineas towards the expenditure to be incurred by the Society in holding the Show.

The Chairman expressed the gratification of the Board at the receipt of the offer, which, he said, had not been received in time to be placed on the Agenda for that Meeting. He stated it would be put on the Agenda for next Meeting, and that, in the meantime, the Committee which had been appointed at last Meeting would visit Glasgow in order to inspect the site, and report to the Meeting of Directors in May.

Inverness Show, 1932.

Rule 44.—A further discussion took place with regard to the application of Rule 44, which was in the following terms:—

> "The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border

Leicester and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face or legs have been dealt with by the use of foreign substances."

Mr Ian M. Campbell moved that the Secretary be instructed to direct the special attention of all Exhibitors of Blackface, Cheviot, Border Leicester and Half-bred Sheep to the terms of the Rule, and this was agreed to.

The Chairman pointed out that if it were desired to extend the Rule so as to apply to all breeds of Sheep, that should be done at the Meeting in November.

North of Scotland College of Agriculture.—A letter was read from the Secretary of the North of Scotland College of Agriculture, forwarding an estimate by the Society's Showyard Erector for the fitting up of the College stand at the Show. The stand desired would be 90 ft. by 40 ft., with a separate pen for animals 20 ft. by 20 ft. The cost of the necessary fitments was estimated at £47, 10s., and it was decided that the Society defray this cost.

Discolouration of Wool, &c.

A Minute of Meeting of Science Committee, dated 6th April, was submitted and approved.

The Minute stated that Dr J. F. Tocher had submitted a report on the Investigation he had carried out with regard to the discolouration of Wool. This report contained a statement of the number of bloom dips in existence, and the nature of the colouring matter in these dips. It also contained the results of tests, showing that the colouring matter was detrimental to the wool, and affected the quality of the wool to an extent which rendered it advisable to discontinue the use of all colouring matter.

It was decided that Dr Tocher should be asked to prepare a Summary of the Report, for circulation to the Board, for consideration at next Meeting.

It was also suggested that copies of the Summary be sent to the undermentioned Breed Societies, with an invitation to three representatives of each Society to meet the Science Committee, say, in November, to discuss the matter—Border Leicester, Blackface, Cheviot, Suffolk, Oxford Down, Dorset Horn, Shropshire.

It was further recommended that the Manufacturers of the various dips be informed that the Directors have the matter of discolouration of wool under consideration, and would be glad to have their observations as to any steps which could be taken to ensure the adoption of a colouring matter which could be readily removed without damage to the wool.

Poisonous Substances in Feeding-Stuffs.—The Committee had also considered a statement by Dr Tocher with regard to the presence of minute quantities of poisonous substances in certain feeding-stuffs, and recommended that Dr Tocher be requested to make certain analyses in connection therewith.

Dundee Show, 1933.

A full discussion took place with regard to the date of the Show to be held next year at Dundee.

Mr Archibald Whyte moved that the date be the 20th-23rd June.

This was seconded by Sir Ralph Anstruther, Bt., and unanimously agreed to.

The Chairman pointed out that it would not be desirable to publish any date as having been definitely fixed until the President for the year—H.R.H. The Duke of York—had been consulted as to whether the date would be suitable for him.

It was accordingly decided to delay publication of the date until next Meeting.

Forestry Examination.

A Minute of Meeting of Education Committee, dated 6th April, was submitted and approved.

The Minute stated that an Examination for the Society's First and Second-Class Certificates in Forestry had been held on 8th, 9th and 10th March, when one candidate presented himself for examination. This candidate was successful in securing the Second-Class Certificate. The name of the successful candidate appears in the Appendix to this volume of 'Transactions,' under "Forestry Department."

Finance.

A Minute of Meeting of Committee, dated 6th April, was submitted and approved. The Minute dealt with the following matters :—

Revision of Bye-Laws.—The Committee recommended the reappointment of the Sub-Committee which was appointed on 1st May 1929 to deal with a Memorandum by the Society's Law Agents with regard to revisal of the Bye-Laws as they affect procedure at General Meetings. The Sub-Committee, as reconstituted, was as follows: Sir Ralph Anstruther, Bt.; Mr Alexander Murdoch; Colonel F. J. Carruthers; Mr James M'Laren; Mr J. E. Kerr; Mr William C. Hunter; and the Society's Law Agents.

St Kilda Fund.—The Secretary had reported that the balance of £27, 13s. 5d., which remained in the St Kilda Fund, had now been distributed amongst the former inhabitants of St Kilda, according to a Statement of Allocation which was submitted. The St Kilda Fund was, therefore, now completely exhausted.

It was recommended that the thanks of the Board of Directors be conveyed to the Department of Health for Scotland for their co-operation and assistance in the allocation and distribution of the Fund.

MEETING OF DIRECTORS, 4TH MAY 1932.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown; Mr Alexander Clark; Mr Thomas Elder; Mr Alexander Forbes; Mr John Hewetson; Mr J. E. Kerr; Mr James R. Lumsden; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr John M. Roger; Mr T. Mercer Sharp; Mr John P. Sleigh; Major S. Strang Steel; Captain John C. Stewart; Mr Thomas Templeton; Mr Falconer L. Wallace. *Extraordinary Directors*—Hon. G. Corbett; Mr George Grant; Mr Walter Mundell; Mr John W. Prentice; The Hon. Walter T. H. Scott; Mr Phipps O. Turnbull. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist*—R. Stewart MacDougall, M.A., D.Sc.

Importation of Meat, &c. (Wrapping Materials), Order of 1932.

A letter was submitted from the Ministry of Agriculture and Fisheries, forwarding copies of the above Order, together with copies of a Memorandum setting out the objects of the Order, and describing in detail its main provisions. The principal object of the Order was to prevent material used for wrapping meat from being subsequently used in the manufacture of sacks for containing feeding-stuffs and other material, as this entailed risk of the introduction and spread of foot-and-mouth disease.

Dundee Show, 1933.

The Chairman reminded the Directors that it had been unanimously decided at last Meeting to fix the date of the Dundee Show next year from the 20th to 23rd June, but that publication of the date had been delayed until the President for the year, His Royal Highness The Duke of York, had been consulted as to whether the date would be suitable for him.

The Secretary read a letter from Rear-Admiral Basil V. Brooke, in which it was stated that, as far as His Royal Highness could say at that early date, the date suggested would be convenient, but it was impossible for him yet to give a definite undertaking that he and the Duchess would be able to attend the Show next year.

It was agreed that the date fixed for the Show be now published—viz., 20th to 23rd June 1933, inclusive.

Show of 1934.

A letter from the Town-Clerk of Glasgow, in which the Corporation of the City invited the Society to hold the Show of 1934 in Bellahouston Park, was again submitted.

A Minute of Meeting of Show Sites Committee, dated 4th May, in which the Committee unanimously recommended that the offer of the Corporation of Glasgow of Bellahouston Park as a site for the Show be accepted, was also submitted.

The Chairman, in moving approval of the Minute, said the Sites Committee had visited Glasgow on 2nd May, when they had carefully inspected the site, and were entertained to luncheon by the Lord Provost. On behalf of the Directors, he had thanked the Lord Provost for his hospitality, and had also expressed their appreciation of all the Corporation had done for the Society in connection with the most successful Show held in 1925. He had also mentioned that the year 1934 would be the 150th anniversary of the foundation of the Society, and they might consider whether the Show of that year should be made something out of the ordinary.

Sir Ralph Anstruther of Balcaskie, Bt., seconded, and the Minute was unanimously approved.

Discolouration of Wool.

A Memorandum on Discolouration of Wool, by Dr J. F. Tocher, was submitted.

The Secretary reminded the Board that, at last Meeting, there had been submitted a recommendation by the Science Committee that copies of the Memorandum be sent to the Breed Societies concerned, with an invitation to these Societies to appoint representatives to meet the Science Committee, say, in November, to discuss the matter. It was also recommended that Manufacturers of the various Dips be asked for their observations as to any steps which could be taken to secure the adoption of a colouring matter which could be readily removed without damage to the wool.

After some discussion, the Memorandum and recommendations of the Science Committee were approved.

Foot-and-Mouth Disease.

Colonel F. J. Carruthers of Dormont made a statement regarding the reported origin of the outbreak of foot-and-mouth disease in June 1931. He said the matter was a very serious one, and one they should consider very carefully. It would be within the recollection of the Board that six years ago they sent a deputation, together with the Royal Agricultural Society of England, to meet the Minister of Agriculture in the Royal Society's Showyard at Reading. That was following upon a serious outbreak which involved not only England but Scotland, and was traced definitely to carcases of pigs imported from Holland. Following upon that, the Ministry put an embargo upon these pig carcases. When the deputation went to Reading, they made, on the instructions of the Directors, a strong appeal for the embargo to be extended to green vegetables from infected countries like Holland. They were told then that there was no definite proof that the disease could be imported by vegetables, but the Minister stated that if proof were forthcoming that infection could be brought in in that way an embargo would be put on.

Following the outbreak last year—an outbreak which wrecked the Society's Hundredth Show—the Ministry of Northern Ireland made an exhaustive inquiry as to the source of infection. Their Chief Veterinary Officer, having obtained all the evidence possible, and having examined it very carefully, came to the conclusion that the probable source of infection was a cargo of Broccoli or Cauliflower landed at Leith and sent over to Belfast. The Minister of Agriculture for Northern Ireland had accepted that as being definitely proved. Unfortunately, their own Minister of Agriculture would not accept it in the meantime.

Colonel Carruthers, continuing, said it came to this, that before the Ministry would take action regarding these foreign vegetables, they required definite proof that infection had come over with the vegetables. The only possible way he could see whereby that proof could be obtained was by a prolonged experiment with a number of animals fed on nothing but imported vegetables.

He thought it very desirable that the matter should be at once discussed, and suggested that they might invite the Royal Agricultural Society of England and the Royal Ulster Society to join with them in representing to the Minister of Agriculture that the time had now come to exclude these vegetables.

The Hon. T. G. P. Corbett, Rowallan, supported the statement made by Colonel Carruthers, referring especially to the heavy loss sustained by Dairy Farmers.

The Chairman suggested that a small Committee be appointed to go into the matter, and to get into communication with the Royal Agricultural Society of England and the Royal Ulster Society, with a view to joint representation being made to the Minister of Agriculture to prohibit the importation of vegetables from any country where foot-and-mouth disease existed. This proposal was agreed to, and the Committee was appointed, with powers, as follows: Mr Alexander Murdoch, Colonel F. J. Carruthers and the Hon. T. G. P. Corbett.

Warble Fly Investigation.

A letter was submitted from the Leathersellers' Company, London, intimating that their Committee were prepared to make a grant of one half the actual sum expended in conducting Demonstration Schemes in Scotland during the current year, such grant not to exceed a maximum of £100.

On the Motion of Colonel F. J. Carruthers, it was agreed to thank the Leathersellers' Company's Committee for the proposed grant.

Macaulay Institute for Soil Research.

An application was submitted from the Macaulay Institute for Soil Research for a grant towards the funds of the Institute.

It was agreed that the application be remitted to the Finance Committee for consideration and report.

Animal Diseases Research Association.

An application from the Animal Diseases Research Association, for a renewal for the current year of the grant of £200 which had been given for the past six years, was submitted.

The Secretary reported that the application had that day been considered by the Finance Committee, which had agreed to recommend that the application be granted. The Committee, however, wished again to place on record that the grant must not be regarded as an annual subscription, and that the Society must keep itself free to renew the grant, or discontinue it, at its discretion.

The recommendation of the Finance Committee was approved.

Glasgow Veterinary College.

An application from the Glasgow Veterinary College, for a renewal for the current year of the grant of £100 which had been given for the past two years, was submitted.

On the recommendation of the Finance Committee, it was decided that the application be granted.

Chillingham Park Wild Cattle.

A letter was submitted from Mr Hugh S. Gladstone of Capenoch, Thornhill, Dumfriesshire, forwarding a circular issued by the Trustees appointed by the Zoological Society of London for the preservation of the Chillingham Park Wild Cattle. This letter asked the Society to identify itself with the movement by becoming subscribers, or, if not prepared to subscribe, that the Society should write a letter showing its appreciation of the effort which was being made to preserve a herd which might be regarded as unique.

On the recommendation of the Finance Committee, it was agreed that a sum of £10 be given towards the fund being raised for the preservation of the herd, and that a letter be sent, as desired, expressing appreciation of the movement.

A Stack Foundation.

A letter was read from the Secretary of the Elgin Branch of the National Farmers' Union of Scotland regarding the possibility of the construction of a stack foundation which could be drawn by mechanical means to the barn door, thus saving a double forking.

It was agreed that the letter be remitted to the Implements Committee for consideration and report.

Colorado Beetle.

A letter was submitted from the Department of Agriculture for Scotland forwarding copies of an illustrated leaflet, and calling attention to the risk of the introduction of the Colorado Beetle into this country. The Department requested the Society to bring to the notice of its Members the vital importance of promptly notifying outbreaks, or suspected outbreaks, to the Department.

Inverness Show, 1932.

Rule 44.—The Chairman referred to the decision arrived at at last Meeting, that the Secretary be instructed to direct the special attention of Exhibitors of Blackface, Cheviot, Border Leicester and Half-Bred Sheep, to the terms of Rule 44. He expressed the view that something should be added to the circular, making clear to Exhibitors what exactly, in the view of the Directors, fell within the scope of the Rule.

After full discussion, it was decided that, in the circular sent out to Exhibitors, words be added to the effect that the Directors have decided that the Rule shall not be interpreted as prohibiting the use of ordinary dips or bloom dips.

MEETING OF DIRECTORS, 1st JUNE 1932.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—*Ordinary Directors*—Mr Ian M. Campbell; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr Alexander Forbes; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major Robert W. Sharpe; Mr A. A. Hagart Speirs; Major S. Strang Steel; Mr Thomas Templeton; Mr Archibald Whyte; Mr George Will. *Extraordinary Directors*—Mr Norman H. Constable; Hon, T. G. P. Corbett; Mr James Durno; Mr William Meiklem; Mr John W. Prentice; Mr Phipps O. Turnbull. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

Inverness Show, 1932.

Tomato Competition.—On a request from the Department of Agriculture it was agreed to grant permission to hold a Competition on the same lines as last year.

Cutting Grass in Showyard.—A letter was read from Mr Andrew Pollock suggesting, on behalf of a number of Implement Exhibitors, that the Society should cut the rough grass on the stands before the arrival of any Implements or Machinery.

After discussion it was agreed that the request was reasonable, and it was remitted to the Steward of Implements and the Consulting Engineer to make arrangements for complying, as far as practicable, with the request.

Foot-and-Mouth Disease.

The Chairman recalled that at last Meeting a small Committee, consisting of Colonel Carruthers, the Hon. Mr Corbett and himself, had been appointed to draw up a Resolution to be sent to the Royal Agricultural Society of England and the Royal Ulster Agricultural Society, with a view to its adoption by these Societies, in order that it might be forwarded to the Minister of Agriculture as a conjoint representation. The Committee had met and drawn up a Resolution, copies of which had been circulated to each of the Directors, and also sent to the Royal Agricultural Society and the Royal Ulster Society. The Resolution was in the following terms:—

RESOLUTION regarding FOOT-AND-MOUTH DISEASE and the IMPORTATION OF VEGETABLES, adopted by the Directors of the Highland and Agricultural Society of Scotland at a Meeting held on 1st June 1932.

We, the Directors of the Highland and Agricultural Society of Scotland, realising the grave danger of Foot-and-Mouth Disease being introduced into this country through the importation of vegetables from continental countries in which the disease is prevalent, respectfully ask the Minister of Agriculture to take action to prohibit the importation of vegetables from these countries.

It will be recalled that the Minister of Agriculture received a deputation from the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland in the Royal Showyard at Reading in 1926, when the importation of continental vegetables was discussed. The Minister then stated that, if it could be proved that disease was imported into this country with vegetables, he would agree to prohibit the importation of all such vegetables from countries not free from Foot-and-Mouth Disease.

Following the outbreak of Foot-and-Mouth Disease which originated in Northern Ireland in June last year, an exhaustive inquiry was made by the Chief Veterinary Officer of the Ministry of Agriculture for that country, when strong circumstantial evidence was obtained that the outbreak was traceable to a cargo of Dutch broccoli or cauliflower landed at Leith towards the end of May.

This evidence has been accepted by the Minister of Agriculture for Northern Ireland as conclusive (Official Report of Proceedings in the House of Commons, Northern Ireland, 14th April 1932), and it is regretted that the Minister of Agriculture for Great Britain is unable to take the same view.

It is admitted that the leaves of vegetables, such as those of cabbage and cauliflower, form an excellent medium for the preservation and conveyance of the virus of Foot-and-Mouth Disease. Further, the virus may remain infective on such material, and in the soil, for a period of about three weeks. (Fourth Progress Report of the Foot-and-Mouth Disease Research Committee of the Ministry of Agriculture.)

In many areas of the Continent of Europe market gardening is carried on under such conditions that animals are brought into close contact with growing vegetables and vegetable products, thus providing ample opportunities for contamination.

It is known that Foot-and-Mouth Disease was extremely prevalent in Holland during the first six months of 1931, there being 2500 outbreaks during that period, while in the month of May alone there were 741 outbreaks.

It is therefore submitted that infection from such a source is not only possible but highly probable. It is difficult to see in what way more direct proof could be obtained excepting through long and extensive experiments with animals fed solely on imported vegetables. It is further considered that the matter is too urgent to wait for such experiments, even if there were a probability of their being undertaken.

While the loss to the Treasury through the outbreak referred to was £91,210, it must be borne in mind that this does not represent the whole cost of the outbreak. The additional loss, direct and indirect, to the agricultural community, through loss of stock and produce, and through the disorganisation of the livestock industry, both pedigree and commercial, may be taken at an equivalent or greater amount.

The Directors of the Highland and Agricultural Society of Scotland respectfully submit that there is evidence to justify the view that grave danger exists of Foot-and-Mouth Disease being introduced into this country by means of imported vegetables, and they unanimously resolve to urge upon the Minister of Agriculture the necessity of prohibiting the importation of vegetables from countries where Foot-and-Mouth Disease is known to be prevalent.

Alexander Murdoch, *Chairman of Directors.*
John Stirton, *Secretary.*

8 Eglinton Crescent,
Edinburgh.

The Secretary reported that he had, the previous day, received the following telegram from the Royal Agricultural Society of England:—

> "*Society, Edinburgh.*
>
> "Veterinary Committee to-day considered your letter and Draft Resolution *re* Foot-and-Mouth Disease. They will recommend to Council to-morrow that Minister of Agriculture be requested to receive a joint deputation of this Society, your Society, and Royal Ulster Society, to discuss matters before any resolution is sent. Am writing sending copy of my President's letter to Minister. Practice."

It was also reported that a reply had been received from the Royal Ulster Agricultural Society to the effect that the Resolution would be considered by the Council of that Society on 10th June.

After discussion, the resolution was approved.

It was decided, before taking further action, to await replies from the Royal Agricultural Society of England and the Royal Ulster Agricultural Society as to whether these bodies had agreed to adopt the Resolution. It was, at the same time, decided that the Resolution should be forwarded to the Minister of Agriculture and to all Members of Parliament, even although the two Societies above mentioned did not see their way to adopt its terms.

It was further agreed that the whole matter be left in the hands of the Committee already appointed, with powers to take such action as they might consider desirable.

Ottawa Conference.

The Secretary reported that shortly after last Meeting a letter was received from the Minister of Agriculture with reference to the appointment by the Government of Sir Douglas Newton, M.P., as Adviser for Agricultural questions to the United Kingdom Delegation to the forthcoming Imperial Economic Conference at Ottawa. The Minister was anxious that Sir Douglas Newton should be able, before leaving for Ottawa, to collect the views of representative Agricultural Organisations on the various problems which would fall for consideration. He thought, therefore, that it would be of great advantage if Sir Douglas Newton could have the assistance in London of a Committee composed of delegates appointed by the various Agricultural Organisations, and he invited the Society to appoint one representative to serve on the Committee.

After consultation with the Chairman, the name of Colonel F. J. Carruthers had been forwarded to the Minister of Agriculture as the Society's representative on the proposed Committee.

Colonel Carruthers reported that he had attended two Meetings, and that other Meetings were in prospect. While unable to disclose the nature of the discussions, he could say that the Committee were considering everything connected with Agriculture that was imported or exported.

The appointment of Colonel F. J. Carruthers as the Society's representative was confirmed, and the Chairman, on behalf of the Directors, thanked Colonel Carruthers for the report which he had given, and for his services on the Committee.

Movable Stack Foundation.

A Minute of Meeting of Implements Committee, dated 1st June, was read and approved.

The Minute stated that, in accordance with the remit from the Board at last Meeting, the Committeee had considered the letter from the Elgin Branch of the National Farmers' Union of Scotland, in which attention was drawn to the possibility of constructing a stack foundation which could be drawn by mechanical means to the barn door, thus saving a double forking.

The Secretary reported that he had written in reply to the letter, pointing out that there did not appear to be any serious difficulty, from the mechanical point of view, in devising such an arrangement. It would not be difficult to design a steel or iron stack foundation, mounted on wheels, which would run on suitable rails laid to the barn door. These would require to be of substantial construction, but, apart from that, it appeared to be mainly a question of cost.

The Committee had approved of the terms of the letter. They were of opinion that the proposal, while embodying no new invention, was perfectly feasible, but that the cost of any such scheme would be such as to preclude the possibility of its general adoption. It could only be undertaken where the cost was a secondary consideration.

Animal Diseases Research Association.

On the Motion of Sir Ralph Anstruther, Bt., it was unanimously agreed to confirm the proposed grant of £200 for the current year to the Animal Diseases Research Association.

Glasgow Veterinary College.

On the Motion of Sir Ralph Anstruther, Bt., it was unanimously agreed to confirm the proposed grant of £100 for the current year to the Glasgow Veterinary College.

Scottish National Development Council.

A letter was read from the Secretary of the Scottish National Development Council stating that that body was forming a Committee to inquire into the possibility of developing Rural Industries in Scotland, and inviting the Society to appoint a representative to act on the Committee.

It was unanimously agreed that Major Robert W. Sharpe of The Park, Earlston, be appointed as the Society's representative.

The James Archibald Prize.

A letter was read from Mr David Archibald, Christchurch, New Zealand, intimating his desire to invest a sum of money which would yield a sufficient annual income to enable the Society to offer a prize of about £20 in money to the Exhibitor of the best Blackface Sheep (any age or sex, except Lambs) exhibited at the Annual Show. The prize would be known as the "James Archibald Prize," in memory of a brother of the donor.

It was unanimously agreed to accept the Special Prize, and the Secretary was instructed to express to Mr Archibald the cordial thanks of the Directors for his generous offer.

Improvement of Live Stock (Licensing of Bulls) Act, 1931.

A letter was read from the Department of Agriculture inviting the Society to nominate persons for appointment to the Panel of Referees under the above Act. In considering names to be put forward, it was suggested that the Society might nominate 12 representatives who would be able to deal more particularly with all classes of ordinary Commercial Stock, as apart from Pedigreed Stock, and also that the nominees should be selected from the various areas throughout Scotland.

It was agreed that the following names be submitted: Mr J. P. Brown, Dipple, Fochabers; Major A. D. Campbell, Stanstill, Wick; Mr James Durno, Crichie, Inverurie; Mr Thomas Elder of Stevenson, Haddington; Mr John Hewetson, Baltersan, Newton-Stewart; Mr William Hutcheson, Courthill, Kelso; Mr James Kilpatrick, Craigie Mains, Kilmarnock; Mr James M'Laren, Cornton, Bridge of Allan; Mr William Meiklem, Bennochy Park, Kirkcaldy; Mr Alexander Munro of Leanach, Culloden Moor, Inverness; Mr James J. Paterson, Terrona, Langholm; Mr Archibald Whyte, Spott, Kirriemuir.

Finance.

A Minute of Meeting of Committee, dated 1st June, was submitted and approved. The Minute recommended that a grant of £30 be again given to the Highland Reel and Strathspey Society for the current year.

MEETING OF DIRECTORS HELD IN THE SHOWYARD, INVERNESS, 22ND JUNE 1932.

Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown; Mr Ian M. Campbell; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr Alexander Forbes; Mr William Henderson; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James R. Lumsden; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Murdoch; Mr Robert Park; Mr John Robson, Jun.; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major S. Strang Steel; Captain John C. Stewart; Mr Thomas Templeton; Mr Falconer L. Wallace; Mr Archibald Whyte. *Extraordinary Directors*—Major A. D. Campbell; The Hon. T. G. P. Corbett; Commander H. Dunbar Dunbar-Rivers; Mr James Durno; Mr George Grant; Lieut.-Colonel M. Grant-Peterkin; Mr Duncan A. MacLennan; Mr R. S. M'William; Mr William Meiklem; Mr Walter Mundell; Mr Alexander Munro; Mr Andrew Pollock; Mr John W. Prentice; Mr James Scott; The Hon. Walter T. H. Scott, Master of Polwarth; Mr Charles F. Tulloch; Mr Phipps O. Turnbull. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Auditor*—Mr George James Gregor, C.A.

Protests.

The Secretary reported that no Protests had been lodged.

Precepts.

The Chairman was authorised to sign the Precepts for the prizes awarded at the Inverness Show.

Authority was given to draw upon the Society's Ordinary Funds to meet any deficit on the Show Account.

Donation by Town of Inverness.

A letter was read from the Town Clerk of Inverness intimating that the Town Council had resolved to grant a donation of 50 Guineas towards the Show Funds, and enclosing a cheque for that amount.

The Secretary was instructed to convey to the Town Council of Inverness the cordial thanks of the Directors for this handsome donation to the Show Funds.

MEETING OF DIRECTORS, 2ND NOVEMBER 1932.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr James P. Brown; Mr George Buchanan; Mr John E. B. Cowper; Mr James Durno; Mr Thomas Elder; Captain Thomas Elliot; Mr W. P. Gilmour; Mr William Henderson; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Alexander Munro; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Captain John C. Stewart; Mr Charley Tinker; Mr Phipps O. Turnbull; Mr Falconer L. Wallace; Mr T. G. Wilson. *Extraordinary Directors*—Mr Alexander Batchelor; Mr J. Belfrage Black; Mr Thomas A. Buttar; Mr F. W. Christie; Mr Thomas Clark; The Hon. T. G. P. Corbett; Mr George Grant; Mr William C. Hunter; Mr James R. Lumsden; Mr William Meiklem; Mr Alexander Murdoch; Mr Robert Park; Mr Andrew Pollock; Mr John W. Prentice; Mr Thomas Templeton; Mr William Tod; Mr Archibald Whyte. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c. *Consulting Entomologist* –Mr R. Stewart MacDougall, M.A., D.Sc., LL.D.

The late Mr George Will, Dumfries.

Before proceeding with the business of the Meeting, the Chairman referred, with deep regret, to the death, in October, of a valued colleague on that Board, Mr George Will, Acrehead, Dumfries. Mr Will, he said, was present at their last Meeting in June, and, although he had reached the advanced age of over eighty years, he exhibited, in a remarkable degree, that sound practical knowledge and keen interest in Agriculture for which he was noted throughout his career. His name would be particularly associated in their minds with the management of the Crichton Royal Farm, Dumfries, which he brought to such a state of perfection that it was regarded as a model of what an up-to-date farm should be, both in respect of crop-growing and live-stock breeding. Mr Will took an active part in the public work of the district, more particularly in so far as it related to Agricultural and Educational matters.

During the past ten years he had served, with one interval of two years, as a Director on the Board of that Society. He was an active worker in connection with the Annual Show, and his services on various Committees of the Board were highly valued, and his advice on all practical matters carried weight in the counsels of the Society. His quiet and unassuming manner, and his kindly and genial disposition, earned the esteem and regard of all his colleagues on the Board.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to the family of the deceased.

The late Duke of Roxburghe, K.T.

The Chairman also referred, with deep regret, to the death, at the end of September, of His Grace The Duke of Roxburghe. While His Grace, he said, was long associated with the Society as a member, it was mainly as President during the year of the Kelso Show, 1926, that he became closely identified with the work of the Society. It was largely due to his personal interest in the Show that it achieved the measure of success with which it was attended, and the presence at the Show of His Royal Highness The Prince of Wales was entirely due to His Grace's effort and influence.

His Grace was exceedingly popular in the Kelso district, and his keen and practical interest in Agriculture, and in all public affairs affecting the welfare of the Borders, rendered him highly respected and esteemed throughout a wide area.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Her Grace The Duchess of Roxburghe.

The late Colonel R. F. Dudgeon, C.B., of Cargen.

The Chairman also referred, in sympathetic terms, to the death of a former distinguished member of that Board—the late Colonel R. F. Dudgeon of Cargen. Colonel Dudgeon, he said, had a long association with the Society, of which he became a Member in 1877, and a Director for the first time in 1886. From that date onwards he served on the Board, with one interval of four years, over a period covering twenty-six years. He was also a Vice-President in 1922.

Colonel Dudgeon was one of the best-known Landed Proprietors in the South-West of Scotland, and took an active and a leading part in all the public work of the district. In all these activities his charm of manner and genial personality, combined with sound practical judgment, rendered him popular with all with whom he was associated.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Mrs Dudgeon and the family of the deceased.

The late Mr John Murray, Balruddery.

The Chairman said that there had also passed away, since their last Meeting, a former Member of that Board—Mr John Murray, Bulruddery, Dundee. Mr Murray's name, he said, might not be so well known to the present Directors as to those of an earlier period, for he was a Director of the Society from 1900 to 1911. Mr Murray was one of the best-known farmers in the Carse of Gowrie, and he attained considerable success as a Breeder and Judge of Aberdeen-Angus Cattle and Border Leicester Sheep. Although his association with the Board belonged to a generation now almost forgotten, it was only proper that they should place on record their appreciation of the services which, in his day, he rendered to the Society.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Mrs Murray and the family of the deceased.

Chairman of the Board for 1932-1933.

On the Motion of Mr J. E. Kerr of Harviestoun, Dollar, seconded by Mr James M'Laren, Cornton, Bridge of Allan, Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, was unanimously re-elected Chairman of the Board for the ensuing year.

Mr Alexander Murdoch, in accepting office, thanked the Directors for the honour they had again conferred upon him, and for the manner in which they had supported him during the year in which he had held office.

Letters.

The following letters were submitted :—

Department of Agriculture for Scotland.—Sending copy of a letter addressed to Mr J. P. Ross-Taylor, the Society's nominee on the Wool Breeding Council, which had now been dissolved. In the letter, the Chairman of the Council (Sir Robert B. Greig) expressed appreciation of the valuable assistance and support given by Members of the Council. The development of Wool Research, and the close contact which had been established between Research centres in this country and in other parts of the Empire, and between Research workers and producers and manufacturers, was due in large measure to the efforts of the Council, to whom the thanks of the Department of Agriculture were due.

Glasgow Veterinary College.—From the Secretary of the College, and from the Secretary of the Students' Representative Council of the College, expressing thanks to the Society for medals presented annually to successful students, and also for the contribution which the Society had given for a number of years to the funds of the College.

Damage by Trespass.

A letter was read from the Scottish Land and Property Federation with regard to the serious damage done to private property of all kinds by the large numbers of persons who wandered at large over every kind of land, cultivated and uncultivated, fenced and unfenced. This applied not only to land in the vicinity of the large industrial areas, but also to rural areas which lay remote from the towns where those people resided. The damage done to crops, stock, fences and plantations was in many places very serious. Owners and their tenants often found it impossible to deal with the new situation which had arisen, and it was suggested that the time had come for some amendment of the law, both as regards individuals and dogs, in order to protect the legitimate interests of the owners and occupiers of the ground.

The Federation had decided to call a Conference of the Societies interested in Agriculture and Forestry, and invited the Society to nominate representatives. It was agreed that the following gentlemen be asked to represent the Society at the proposed Conference: Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire; Colonel F. J. Carruthers of Dormont, Lockerbie; Mr J. P. Ross-Taylor, Mungoswalls, Duns; Mr Alexander Batchelor, Craigie Home Farm, Dundee.

The Hon. T. G. P. Corbett, Rowallan, Kilmarnock, pointed out that over a large part of Ayrshire at the present time there was quite frank intimidation by gangs of poachers. They wandered over the countryside, and if they could not find game they robbed hen-roosts. If a farmer dared to intervene, these gangs opened his gates, broke down his fences and let his stock loose upon the roads. And they had been stealing lambs as well. This, he added, was not ordinary poaching; it was a case of organised gangs going about and intimidating the countryside and doing untold damage, and he suggested that the proposed Conference should give attention to the matter.

Dundee Show, 1933.

Judges.—The following were appointed a Selection Committee to draw up panels of Judges for consideration at next Meeting: Mr J. E. B. Cowper, Mr James Durno, Mr George Grant, Mr William C. Hunter, Mr J. E. Kerr, Mr James Kilpatrick, Mr James M'Laren, Mr Robert Macmillan, Mr Alexander Munro, Mr J. P. Ross-Taylor, Major Robert W. Sharpe, Mr Thomas Templeton, with the Chairman, Treasurer and Hon. Secretary, *ex officii.*

Forage Committee.—The following Committee was appointed to make arrangements for the supply of forage, and report to the Board: Mr John W. Prentice (*Convener*), Mr Alexander Batchelor, Mr J. Belfrage Black, Mr John E. B. Cowper, Mr James M'Laren, Mr Alexander Munro, Mr Robert Park, Mr T. Mercer Sharp, Mr Charley Tinker, Mr Phipps O. Turnbull and Mr Archibald Whyte.

Show Contracts.—It was remitted to the following Special Committee, with powers, to arrange the contract for timber and other contracts in connection with the Showyard: Mr Archibald Whyte (*Convener*), Mr Alexander Batchelor, Mr James Durno, Mr James R. Lumsden, Mr James M'Laren, Mr R. Macmillan, Mr Alexander Munro, Mr Alexander Murdoch, Mr Gavin Ralston, Mr John P. Sleigh, Mr Charley Tinker and Professor Stanfield.

Hotel Accommodation and Catering in Showyard.—The Secretary reported that he had visited Dundee, along with the Chairman of Directors and the Convener of the Shows Committee, and had secured accommodation for Directors and Judges in the Royal Hotel, the Royal British Hotel and the Queen's Hotel. It was remitted to the Chairman of the Board, the Chairman of the Shows Committee, the Convener of the Local Committee, the Steward of Catering and the Secretary to make further necessary arrangements.

Special Prizes.—A large number of Special Prizes were accepted, and votes of thanks accorded to the donors.

Foot-and-Mouth Disease.

Colonel F. J. Carruthers of Dormont, Lockerbie, reported on the representations made to the Minister of Agriculture regarding the danger of Foot-and-Mouth Disease being introduced into this country through the importation of vegetables from continental countries in which the disease was prevalent. A copy of the original representation, approved by the Directors at their last Meeting on 1st June, appeared in the Minute of the Board Meeting of that date.

The Ministry of Agriculture, in reply, forwarded a copy of a letter which they had written to Lord Mildmay of Flete, President of the Royal Agricultural Society of England, on the subject. In that letter it was indicated that they could not accept the evidence that the Ulster outbreak was due to infection from imported vegetables. They suggested that infection was more likely to be carried by scraps of foreign meat, which might contain the virus of the disease, than by foreign vegetables, which could only have acted as carriers of infection. They pointed out that if the importation of these vegetables were prohibited, it would be difficult to refrain from taking similar action in the case of imported meat, maize, barley, wool, and hides and skins, the importation of all of which, they considered, entailed greater danger of disease than vegetables.

To that communication the small Committee appointed on 1st June had sent the following reply :—

8 EGLINTON CRESCENT,
EDINBURGH, *12th July* 1932.

Lieut.-Colonel The Right Hon.
Sir JOHN GILMOUR, Bart., D.S.O., M.P.,
Ministry of Agriculture and Fisheries,
Whitehall Place,
London, S.W.1.

SIR,

Foot-and-Mouth Disease and the Importation of Vegetables.

We are instructed to acknowledge receipt of your letter of 23rd ult., forwarding copy of a letter addressed by you on 20th June to Lord Mildmay of Flete, President of the Royal Agricultural Society of England. The Directors of this Society are disappointed at the terms of your reply to their request for the exclusion of vegetables from Continental Countries where foot-and-mouth disease is prevalent.

The principal difficulty in the way of excluding foreign vegetables appears, from your letter, to be that if action were taken in this direction, similar action would be expected in respect of meat, maize, barley, wool, and hides. With this view, the Directors desire, respectfully, to express disagreement.

In the case of meat, if proper steps are taken to inspect animals before slaughter, and they are detained for a sufficient time, the risk of infected carcases being shipped should be very small ; but no amount of inspection will disclose the presence of the germs of foot-and-mouth disease on green vegetables. The risk of infection through maize and barley must be small, as stock do not come into contact with these as growing crops. Wool and hides are not, on landing, sent to a farm.

The representation made by this Society referred only to vegetables, and not to the other commodities above mentioned. They feel that the impossibility of excluding all possible sources of infection is not a sufficient reason for declining to exclude one source, the danger from which has been proved. The Directors are of opinion that a sufficient case has been made out against these vegetables to warrant their exclusion. While this country cannot do without meat from the Argentine, it can grow enough vegetables to take the place of those at present imported from the Continent.

With regard to the fourth paragraph of your letter, it may be pointed out that there is an obvious difficulty in the way of the Government of Northern Ireland taking action to exclude foreign vegetables, as these vegetables do not come direct from the Continent, but are imported from Great Britain. If the Imperial Government made an Order for the exclusion of foreign vegetables, there is no doubt that the Government of Northern Ireland would take similar action.

The Directors would again recall that, following the 1926 outbreak of foot-and-mouth disease in Scotland, the Government of the day prohibited the importation of pig carcases which had been found to have introduced the disease on that occasion. At an interview accorded by the Minister of Agriculture to a deputation from the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland, at the Royal Showyard at Reading, the Minister stated that if it could be proved that disease was imported into this Country with vegetables, he would agree to prohibit the importation of all such vegetables from Countries not free from foot-and-mouth disease. That is the promise which the Directors of this Society now desire to see implemented.

In more recent times, the importation of potatoes from certain districts of France has been prohibited, on account of the danger of the introduction into this Country of the Colorado Beetle.

The Directors of this Society submit that there is a precedent for taking action to exclude a commodity which has been proved to be a source of danger in introducing foot-and-mouth disease, and they again respectfully urge that action be taken to exclude vegetables from Continental Countries where foot-and-mouth disease is known to exist.

We are, Sir, your obedient servants,
ALEXANDER MURDOCH, *Chairman.*
JOHN STIRTON, *Secretary.*

The reply to the foregoing letter was in the following terms :—

MINISTRY OF AGRICULTURE AND FISHERIES,
10 WHITEHALL PLACE, S.W. 1.
27th August 1932.

JOHN STIRTON, Esq., Secretary,
Highland and Agricultural Society of Scotland,
8 Eglinton Crescent, Edinburgh.

DEAR SIR,

Sir John Gilmour has now considered your further letter of the 12th July as to the risk of the introduction of foot-and-mouth disease through the medium of imported vegetables, and desires me to reply as follows :—

The arguments in your letter seem to be based upon the assumption that there is sufficient evidence against foreign vegetables to justify the issue of an Order prohibiting their importation into Great Britain under the powers given by the Diseases of Animals Acts. In fact, there is no such sufficient evidence. It will perhaps be convenient to recapitulate the position as originally explained in his letter to Lord Mildmay.

Since the 27th August, 1923, there have been 217 outbreaks of foot-and-mouth disease in which no connections, either direct or indirect, could be established with outbreaks in this country. In only five of these cases was there any evidence showing that imported vegetables might conceivably have been involved. In four of these it was equally possible that foreign meat was the cause of the outbreak. In the one remaining case the infected pigs had been conveyed to the farm in a lorry, belonging to a large firm of wholesale butchers, which had probably been used for carrying meat. It will be remembered that vegetables can only be contaminated by accident, whereas the virus may be present in meat and meat products in natural concentration, and may survive in them for a considerable period.

Again, if imported vegetables were such a danger as your Directors believe, imports of the magnitude involved must in all probability have caused numerous outbreaks of the disease in various parts of the country during the last few years ; we have no evidence to that effect.

For these reasons the evidence against imported vegetables appears to the Minister to be very slender, and certainly not such as to justify the stoppage of a trade of which the value in 1931 was £8,000,000.

Yours faithfully,
A. W. KEEBLE, *Private Secretary.*

Colonel Carruthers, continuing, said that there had been a change, since the date of that letter, in the office of the Minister of Agriculture. He did not know whether it would be advisable to press the matter further in the meantime, although he regarded the Ministry's attitude as unsatisfactory.

The Chairman said he thought it would probably be better to leave the matter alone until there was some further development.

On the Motion of Sir Ralph Anstruther, Bt., it was agreed to homologate the action of the Committee, and to thank them for what they had done.

System of Judging.

Mr Robert Park, Brunstane, Portobello, moved the following Motion, which appeared under his name on the Agenda :—

> " That the Society revert to the system of double judging as in force prior to the year 1927."

Mr Archibald Whyte, Spott, Kirriemuir, seconded.

In reply to a question by the Chairman, Mr Park said that his Motion did not entail the appointment of two Judges for sections which, on account of the limited numbers, were judged by one Judge prior to 1927. He also agreed that his Motion did not contemplate the appointment of six Judges for Clydesdales, with subsequent balloting, but the appointment of two Judges for Males and of two Judges for Females.

Colonel F. J. Carruthers moved the previous question, and this was seconded by The Hon. T. G. P. Corbett, Rowallan.

After full discussion, a vote was taken, when fifteen voted for the previous question and twenty-six for the Motion. Mr Park's Motion, that the Society revert to the system of double judging in force prior to 1927, was accordingly declared carried.

It was further agreed that in those sections where two Judges were acting the Reserve Judge be asked to be in attendance in case of dispute.

Agricultural Depression.

On the Motion of the Chairman, it was unanimously agreed to suspend the Standing Orders in order to permit of consideration of the following Motion.

Colonel F. J. Carruthers then moved :—

> "That the Directors appoint three representatives to co-operate with the Scottish Chamber of Agriculture, the National Farmers' Union of Scotland and the Scottish Land and Property Federation, in bringing before the Government the urgency of immediate action being taken to avert the collapse of Agriculture."

Colonel Carruthers, speaking in support, said that the matter was urgent. Representatives of the three bodies mentioned were meeting next day to discuss what steps should be taken to bring the state of Agriculture home to the Government of the day. He felt it would be a misfortune for any deputation to go to London, as representing Scottish opinion on Agriculture, without the active support of that Society ; and what he suggested was that they should send three representatives to the Meeting next day, when no doubt it would be decided what steps were to be taken.

Sir Ralph Anstruther of Balcaskie, Bt., seconded, and the Motion was adopted.

It was agreed that the Society's representatives should be the Chairman, Mr J. P. Ross-Taylor and Mr Robert Miller.

Valuation of Sheep Stocks.

A letter was read from the Department of Agriculture stating that a letter had been received from the Scottish Chamber of Agriculture, in which it was intimated that the Directors of that Chamber had unanimously decided to ask that the Secretary of State for Scotland should appoint a Committee to inquire into the method of valuation of Sheep Stocks, and to make recommendations with a view to a more equitable system being adopted. Representations on the same subject had also been received from the Scottish Land and Property Federation.

The Department stated they would be glad to be favoured with the views of the Society on the proposal made by the Chamber.

The Secretary was instructed to reply that the Directors of the Society were in agreement with the view expressed by the Chamber of Agriculture.

Double Dipping Regulations.

A communication was submitted from representatives of Berwick, Roxburgh and Selkirk Local Authorities, forwarding a Memorandum prepared by Captain A. R. M'Dougal with regard to the Double Dipping Regulations under the Diseases of Animals Acts, as these affected the movement of Scottish Sheep.

It was agreed that the Memorandum be remitted to the Science Committee for consideration and report.

Finance.

The following Minute of Meeting of Finance Committee, dated 2nd November, was submitted.

The Minute dealt, *inter alia*, with the following matter :—

"*James Archibald*" *Prize*.—The Secretary had reported the receipt from Mr David Archibald, Christchurch, New Zealand, of a sum of £600 to be held in trust to provide a prize annually at the Society's Show for the Best Blackface Sheep—excluding Lambs. A Deed of Trust, defining the conditions on which the Fund should be held by the Society, was submitted and signed on behalf of the Society in acceptance of the Trust.

It was agreed to recommend that the Trust Fund of £600 be invested in 5 per cent (Assented) War Loan.

MEETING OF DIRECTORS, 30TH NOVEMBER 1932.

Mr ALEXANDER MURDOCH, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Vice-President—Lord Provost William H. Buist, O.B.E., Dundee. *Ordinary Directors*—Mr James P. Brown; Mr George Buchanan; Mr Ian M. Campbell; Mr Alexander Clark; Mr James Durno; Mr Thomas Elder; Captain Thomas Elliot; Mr Alexander Forbes; Mr W. P. Gilmour; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James M'Laren; Mr Robert Macmillan; Mr Robert Miller; Mr Gavin Ralston; Mr John M. Roger; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr John P. Sleigh; Mr Falconer L. Wallace; Mr T. G. Wilson. *Extraordinary Directors*—Mr Alexander Batchelor; Mr Thomas A. Buttar; Mr F. W. Christie; Mr Thomas Clark; The Hon. T. G. P. Corbett; Mr George Grant; Mr William C. Hunter; Mr James R. Lumsden; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; The Hon. Walter T. H. Scott, Master of Polwarth; Mr William Tod; Mr Archibald Whyte. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

Letters.

The following letters were submitted:—

Lord Provost W. H. Buist, Dundee.—Accepting office as a Vice-President of the Society, and expressing his willingness to do everything possible to make the Show at Dundee a success.

Lord Provost Buist was present at the Meeting, and was cordially welcomed by the Chairman, on behalf of the Directors.

Scottish Traction Engine Owners' and Users' Association.—A letter from the Secretary of the Association was read with regard to the hardship entailed to Members of the Association through the operation of Regulation 67 of the Motor Vehicles (Construction and Use) Regulations, 1931. It was agreed that the letter be remitted to the Finance Committee for consideration and report.

Vacancy on Board.

On behalf of the Ordinary Directors in the Dumfries Show Division, Colonel F. J. Carruthers of Dormont moved that Mr James Wyllie, Tinwald Downs, Dumfries, be nominated, at the General Meeting in January, as an Ordinary Director, to fill the vacancy caused through the death of the late Mr George Will. The nomination was unanimously agreed to.

Dundee Show, 1933.

A Report of the Shows Committee of 1st November, which had been printed and circulated, was submitted and considered in detail.

After slight emendations had been made in the Special Prizes for Cows from Grade "A" (T.T.) or Certified Herds, and in the classification for Hunters, the Report was approved.

A further Minute of Meeting of Shows Committee, dated 30th November, was submitted and approved.

The Minute dealt with the following matters:—

Jumping Competition.—It was recommended that a class be provided, on the Wednesday evening, confined to Competitors permanently resident in Scotland, with horses which had been in the possession of the Competitor at the 1st of May preceding. Prize money £10, £8, £5, £3 and £2.

Poultry and Rabbits.—On a report by the Sub-Committee appointed at last Meeting, it was agreed to recommend that the classes for Poultry be continued, with certain slight alterations, and that the classes for Fur-Producing Rabbits be continued for another year.

Rule 44.—It was recommended that the following words be added to Rule 44—" other than ordinary dips or bloom dips."

Angus Agricultural Association.—A letter had been submitted from the Secretary of the Angus Agricultural Association, intimating that that Association had decided to offer a Silver Challenge Cup, to be called "The Angus Challenge Cup," in commemoration of the holding of the Society s Show at Dundee. It was proposed that the Cup be offered, in the first instance, at Dundee, for Aberdeen-Angus Cattle, but that thereafter it be left to the Directors of the Society to select the classes for which it should be offered, the selection being confined to the following sections—Aberdeen-Angus, Cross-Bred Cattle, Clydesdale Horses, Blackface Sheep, Border Leicester Sheep.

It was recommended that a reply be sent to the Angus Agricultural Association to the effect that the Society would have much pleasure in accepting the Cup under the conditions proposed.

Geldings in Harness.—On the Motion of Mr T. A. Buttar, it was agreed to recommend that a class be provided for Clydesdale Geldings in Harness, for which Geldings entered in the ordinary classes should not be eligible, and it was remitted to the following Sub-Committee to draw up the necessary conditions—Mr Archibald Whyte, Mr T. A. Buttar and the Chairman of Directors.

Honey Section.—On a request from the Scottish Bee-Keepers' Association, it was agreed to provide a class for Mead made from honey, confined to Scottish Exhibitors. The prize money would be 21s., 15s. and 10s., of which amount 21s. was offered by Mr James Coneghan, Secretary of the Association.

Convener of Local Committee.—On the Motion of the Chairman, it was unanimously agreed that the Duke of Atholl, K.T., be appointed Convener of the Local Committee of Management.

Special Prizes.—A number of Special Prizes were accepted, and votes of thanks accorded to the donors.

Discolouration of Wool.

A report on the proceedings at a Conference between representatives of Sheep Breed Societies and the Science Committee, held on 16th November, was submitted, and, on the Motion of Major R. W. Sharpe, Convener, was approved.

The Report was in the following terms:—

Major Sharpe gave a short account of the Society's proceedings with regard to the Discolouration of Wool. The question was originally raised by the Skinners' Association of Scotland, and later representations had also been received from the Scottish Wool Association. These bodies pointed out the damage done to wool by the use of Bloom Dips and other colouring substances, and asked the Society to take steps to secure that the materials used by Farmers for this purpose should be such as could be readily removed by scouring, and would not cause permanent injury to the wool fibre.

After consideration, the Society had instructed the Consulting Chemist, Dr J. F. Tocher, to carry out an examination of the various Bloom Dips on the market, and this had been done. A Memorandum by Dr Tocher, containing the results of his investigation, was in print, and had been circulated to all those present.

A copy of the Memorandum had also been sent to the Manufacturers of the various dips, along with a communication to the effect that the Society would be glad to have their observations as to any steps which could be taken to ensure the adoption of a colouring matter which could be readily removed without damage to the wool. The replies from the various Manufacturers were read to the Meeting. These replies were, with one exception, to the effect that an efficient Bloom Dip could not, meantime, be manufactured without the use of dyes which were injurious to wool. In the exception mentioned, the Manufacturer claimed to make a Bloom Dip which was non-injurious to wool, but admitted it was not at all permanent in character.

In the discussion which followed, it emerged that there was little prospect of inducing Farmers to depart from the practice of using Bloom Dips on Rams and Lambs intended for the Autumn Sales. These, however, did not represent more than 5 per cent of the total wool clip of the Country. It was thought that the only way of dealing with the matter would be for the Wool Brokers to offer a less price for coloured wool, as compared with the price of natural wool.

It was accordingly decided to report to the Board of Directors the consideration which had been given to the matter by the Science Committee, and by the representatives of the Breed Societies. In the view of the Conference, there did not appear to be any other action which could usefully be taken.

It was agreed to recommend that the Directors communicate to the Skinners' Association and the Wool Association a copy of Dr Tocher's Memorandum and the terms of this report, and inform them that the Society had come to the conclusion that nothing further could be done in the matter.

Double Dipping Regulations.

A Minute of Meeting of Science Committee, dated 30th November, was submitted and approved.

The Minute stated that, in accordance with the remit from the Board, the Committee had considered the communication from representatives of Berwick, Roxburgh and Selkirk Authorities, and also the accompanying Memorandum prepared by Captain A. R. M'Dougal. There was also submitted a letter from the Ministry of Agriculture and Fisheries, dated 16th November, in which it was stated "that in view of the continued improvement in the position in Scotland with regard to the incidence of Sheep Scab, the Ministry on the 29th ultimo addressed letters to the Local Authorities in England which have made regulations requiring sheep moved from Scotland to be double dipped, asking that consideration might now be given to the question of modifying the regulations so as to exempt such sheep from the provisions of the regulations. A further communication will be made to you in due course as to the action taken by the Local Authorities in England in response to the Ministry's letter."

After careful consideration, the Committee decided to recommend to the Directors that the Ministry be thanked for their letter, and that the hope be expressed that Local Authorities in England would comply with the Ministry's suggestion. At the same time, it should be represented to the Ministry that if the Local Authorities did not accept the suggestion, the Ministry should withdraw from Local Authorities the existing powers to make regulations regarding the restriction of movement or double dipping of sheep entering their areas.

It was further recommended that, in communicating this decision to the Local Authorities of Berwick, Roxburgh and Selkirk, it should be pointed out that, in the opinion of the Directors, the case would be much strengthened if the five Counties in Scotland which at present have no regulations requiring the sheep in their areas to be dipped twice each season, would consider the advisability of having regulations requiring such seasonal dipping.

Consulting Veterinary Surgeon.

The Hon. T. G. P. Corbett, Rowallan, submitted the following Motion, the terms of which appeared under his name on the Agenda :—

> "That the Directors consider the advisability of appointing a Consulting Veterinary Surgeon who should be added to the establishment of the Society in an advisory capacity."

Mr T. G. Wilson, Carbeth, seconded, and, after some discussion, the Motion was approved.

On the Motion of Major R. W. Sharpe, the whole matter was remitted to the Science Committee for consideration and report.

Agricultural Depression.

Mr Robert Miller, Ferrygate, gave a short report, on behalf of the Society's representatives on the Joint Deputation which proceeded to London after last Meeting and interviewed the Minister of Agriculture, the Secretary for Scotland and the Policy Sub-Committee of the Agricultural Committee of the House of Commons. Details of what transpired had already appeared in the Press. At the request of the Policy Sub-Committee above mentioned, it had been decided to prepare a Memorandum, setting out in a concise form the views submitted by the deputation, for circulation amongst the Members of the Agricultural Committee of the House of Commons.

The Chairman stated that he had received a draft of the proposed Memorandum, which was being printed by the Chamber of Agriculture. On behalf of the Directors, he had undertaken that the Society would defray part of the cost of printing. He moved that the thanks of the Directors be accorded to Mr Robert Miller and Mr Ross-Taylor for their services on the Joint Deputation, and this was unanimously agreed to.

The Chairman also mentioned that there had been received from the National Farmers' Union of Scotland a copy of an Application to the Import Duties Advisory Committee for an increase in the existing rates of duties on imports of "New or Luxury" and "Maincrop" Potatoes.

It was agreed that this Application be remitted to the Society's representatives on the Joint Deputation for their consideration.

Show of 1935.

Major R. W. Sharpe stated that, as a result of consultation with his Co-Directors in the Border Division, they had decided that it would be inadvisable that the Society's Show should be held in that Division in 1935, seeing that the Show of the Royal Agricultural Society of England would be held that year at Newcastle. He moved that the Show in the Border Division be postponed for one year.

The Motion was seconded by The Hon. Walter T. H. Scott, Master of Polwarth, and, after Captain Thomas Elliot had spoken in support, was unanimously approved.

Mr James Durno gave notice that, at next Meeting, he would move that the Society s Show of 1935 be held in the Aberdeen Show Division.

The Chairman reported that, on the invitation of the Town Council of Aberdeen, he, Mr Durno and the Secretary, along with representatives of the Council, had visited and inspected a prospective site for the next Show in that city. The ground inspected appeared to be sufficient in extent, convenient of access from the town and in every way suitable for the Show. Professor Stanfield, Consulting Engineer, had examined the ground, and also reported that it was suitable and that the area available was sufficient.

At the suggestion of the Chairman, it was agreed that the Town Council of Aberdeen should be informed that the ground inspected was considered to be suitable for the Show.

Finance.

A Minute of Meeting of Committee, dated 30th November, was submitted and approved.

The Minute dealt with the following matters :—

Scottish Agricultural Organisation Society.—It was recommended that the grant of £100 to the Scottish Agricultural Organisation Society be renewed for the year 1933.

Warble Fly Investigation.—It was recommended that authority be given to Dr R. Stewart MacDougall to expend on this Investigation a sum not exceeding £25 during the forthcoming season.

MEETING OF DIRECTORS, 4TH JANUARY 1933.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—*Vice-President*—Lord Provost William H. Buist, O.B.E., Dundee. *Ordinary Directors*—Mr George Buchanan ; Mr John E. B. Cowper ; Mr James Durno ; Mr Thomas Elder ; Captain Thomas Elliot ; Mr W. P. Gilmour ; Mr John Hewetson ; Mr J. E. Kerr ; Mr James Kilpatrick ; Mr James M'Laren ; Mr Robert Macmillan ; Mr Robert Miller ; Mr Gavin Ralston ; Mr John M. Roger ; Mr J. P. Ross-Taylor ; Mr T. Mercer Sharp ; Major R. W. Sharpe ; Mr John P. Sleigh ; Major S. Strang Steel ; Mr Phipps O. Turnbull ; Mr T. G. Wilson. *Extraordinary Directors*—Mr Alexander Batchelor ; Mr J. Belfrage Black ; Mr F. W. Christie ; Mr Thomas Clark ; Mr George Grant ; Mr William C. Hunter ; Mr James R. Lumsden ; Mr William Meiklem ; Mr Alexander Murdoch ; Mr Robert Park ; Mr John W. Prentice ; Mr John Stewart ; Mr Thomas Templeton ; Mr William Tod ; Mr Archibald Whyte. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

Dundee Show, 1933.

Stewards.—The principal Stewards of the various departments were appointed as follows : *Cattle*—Mr James Durno ; *Horses*—Mr George Grant ; *Sheep, Goats and Pigs*—Mr Robert Macmillan ; *Poultry and Rabbits*—Mr James R. Lumsden ; *Forage*—Mr John W. Prentice ; *Grand Stands*—Major R. W. Sharpe ; *Gates*—Mr Ian M. Campbell ; *Catering, Honey, &c.*—Mr John E. B. Cowper ; *Implements*—Mr J. P. Ross-Taylor.

Veterinary Inspector.—Mr John Brown, M.R.C.V.S., 55 York Place, Perth, was appointed Veterinary Inspector for the Show, on the usual conditions.

Minute of Shows Committee.—A Minute of Meeting of Shows Committee, dated 4th January, was submitted and approved.

The Minute dealt with the following matters :—

Draught Geldings in Harness.—On a report of the Sub-Committee appointed at last Meeting, it was recommended that the class be not confined to Clydesdale Geldings, but be open to Draught Geldings. These should be shown in Cart Harness, without vehicle, a condition being that the horses must have been regularly worked for a period of twelve weeks prior to the first day of the Show. Exhibited on Friday, 23rd June, and only the prize-winners to take part, as required, in the Parade on Friday. Prize-money, £10, £5, £3, £2 and £1. Clydesdale Geldings entered in the ordinary classes not eligible.

Horse-Shoeing Competition.—The following were appointed a Committee of Management of the Horse-Shoeing Competition: *Directors*—Mr John E. B. Cowper; Mr John M. Roger; Mr George Buchanan. *Local Blacksmiths*—Mr Alexander Anderson, Rockvilla, Monifieth; Mr Alexander M'Laggan, Wellgate, Dundee; Mr Robert Reid, Lingard Street, Carnoustie.

It was also recommended that the following be appointed to act as Judges of Horse-Shoeing, along with the Society's Veterinary Inspector: Mr James Hall, Paisley Road Toll, Glasgow; Mr John Ritchie, Little Belmont Street, Aberdeen.

Rural Industries Section.—The Committee had considered the classification, and agreed to make certain additions thereto, and emendations thereon, in accordance with suggestions made by the Central Council of the S.W.R.I. These entailed an addition of £37 to the money provided by the Society for this section.

Shire Geldings.—It was recommended that a class be provided for Shire Geldings, as at Edinburgh in 1931, and that the following be appointed to judge the class: Mr James Clark, Windlaw, Carmunnock.

Highland and Western Island Ponies.—On a representation from the Highland Pony Society, it was recommended that the following clause be added to Rule 28:—

> "In the case of Highland and Western Island Ponies, these may be measured without shoes, the height limit in such cases being reduced by a quarter of an inch."

College Stand.—On a request from the Edinburgh and East of Scotland College of Agriculture, it was agreed to recommend that, in addition to providing a free stand, the Society carry out the work of fitting up staging and tables within the stand, as was done at Inverness last year.

Oxford Down Sheep.—Correspondence had been submitted with the Oxford Down Sheep-Breeders' Association, from which it appeared that that Association desired to restrict the amount of their contribution to the prize-money for Oxford Down Sheep to £11, instead of £21, as previously intimated.

It was recommended that this request of the Oxford Down Association be agreed to.

Chairs.—The acceptance was recommended of an offer by the Corporation of Dundee to provide 500 to 600 chairs in the Main Square at the Showyard, at a total cost of £25, this sum to cover the cost of transport and any necessary repairs.

Y.M.C.A.—It was agreed to recommend acceptance of an offer by the Scottish National Council of the Y.M.C.A. to provide a tent for the use of Herdsmen and Attendants at the Show, on the same lines as had been done in recent years at the Royal Show in England.

Timber Contract.—A Minute of Meeting of Show Contracts Committee, dated 4th January, was read and approved.

The Minute recommended the acceptance of a tender by Messrs Bell & Sime Ltd., Dundee Sawmills, Dundee, for the hire of the timber for the Dundee Show.

Special Prizes.—A number of Special Prizes were intimated, and votes of thanks accorded to the donors. Amongst these the following new Cup was given by General Sir Ian Hamilton, G.C.B.: Silver Challenge Cup, value £50, for the best Belted Galloway Animal of the sex opposite to that of the winner of the Knockbrex Challenge Cup, "Extra Stock" being eligible to compete. The winning animal to be registered or eligible for registration in the Dun and Belted Galloway Herd-Book.

Scottish Agricultural Organisation Society.

On the Motion of Sir Ralph Anstruther, Bt., it was unanimously agreed to confirm the proposed grant of £100 to the Scottish Agricultural Organisation Society for the year 1933.

Council of Agriculture for England and Wales.

A letter was submitted from the Department of Agriculture for Scotland, intimating that the period for which Mr W. P. Gilmour of Balmangan was nominated as a Scottish representative on the Agricultural Advisory Committee of the Council of Agriculture for England and Wales expired on the 1st of December 1932. Any suggestions the Society might desire to make with regard to the nomination of a Scottish representative for the next period of four years would be submitted to the Secretary of State for Scotland, by whom the nomination was made, in terms of Section 1 (3) (e) of the First Schedule of the Ministry of Agriculture and Fisheries Act, 1919.

It was agreed to suggest to the Department of Agriculture that Mr W. P. Gilmour be reappointed.

£1000 *Prize for New Implement.*

The Secretary reported that twenty-three entries had been received for the £1000 Premium for a New Implement or Machine, offered to mark the occasion of the Society's Hundredth Show in Edinburgh in 1931.

It was agreed that it be remitted to the Implements Committee to consider the entries and advise as to future procedure.

Musk Rats.

A letter was submitted from the Department of Agriculture for Scotland, forwarding copy of an explanatory pamphlet, which had been issued by the Department and the Ministry of Agriculture and Fisheries, on the subject of the Musk Rat or Musquash. The Department asked if the Society would be willing to co-operate by informing its Members of the serious damage caused by musk rats, and of the necessity for prompt action in regard to land that had been invaded, or on which the presence of these animals was suspected.

The Secretary stated that, in reply to that letter, he had written pointing out that in recent years the Society, through reports in the annual volume of 'Transactions' and statements by the Society's Consulting Entomologist at the General Meetings, had warned Members of the dangers arising from the increase of musk rats in this country.

A letter was also submitted from Dr R. Stewart MacDougall, Consulting Entomologist, in which he gave further particulars with regard to the habits of the musk rat, and the steps which had been taken to control its spread on the Continent and in England.

It was agreed that, apart from again referring to the matter in the 'Transactions,' there was no further action which could usefully be taken by the Society.

Show of 1935.

A letter, dated 29th December 1932, from the Lord Provost of Aberdeen was read, extending, on behalf of the Corporation, a cordial invitation to the Society to hold the Annual Show in Aberdeen in 1935.

Mr James Durno, Crichie, Inverurie, moved the following resolution :—" That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1935 be held in the Aberdeen Show Division."

Mr George Grant, Glenfarclas, Blacksboat, seconded, and the resolution was unanimously adopted.

New Members.

The Secretary said he had much pleasure in informing the Directors that there were 323 candidates for election as Members of the Society at the Anniversary General Meeting to be held that afternoon. Of this total, the extraordinary number of 205 had been proposed by Mr Alexander Batchelor, Craigie Home Farm, Dundee. There were also 35 proposed by Mr Archibald Whyte, Spott, Kirriemuir.

The Chairman said he thought a cordial vote of thanks should be accorded to Mr Batchelor and to Mr Whyte for the excellent service they had thus rendered the Society, and this was unanimously agreed to.

Finance.

A Minute of Meeting of Finance Committee, dated 4th January, was submitted and approved.

The Minute dealt *inter alia* with the following matter:—

Threshing Engines.—In accordance with the remit from the Board, the Committee had considered the letter from the Scottish Traction Engine Owners' and Users' Association with regard to the hardship entailed on Members of that Association through the operation of Regulation 67 of the Motor Vehicles (Construction and Use) Regulations, 1931. According to that regulation, every vehicle had to be driven and used on a road in such condition that no smoke or vapour, &c., was emitted, which could have been prevented or avoided by the taking of any reasonable steps, or the exercise of reasonable care. A member of the Association was convicted under that regulation when returning home from threshing operations, the charge being that too much smoke issued from his engine. The member in question had been visiting various farms on threshing operations, and was supplied, according to the usual custom, with fuel and water by the farmers engaging the threshing mill, it being impossible to carry sufficient fuel to last the three or four weeks during which the threshing mill was away from its base. The Association asked that this Society should make representations to the Minister of Transport on the subject, and suggested that perhaps some form of exemption might be given to threshing engines proceeding to and from farms, or possibly Local Authorities could be instructed not to administer the regulation too harshly in such cases.

After careful consideration, the Committee had decided to recommend to the Board of Directors that they give their general support to the representation made to the Minister of Transport by the Scottish Traction Engine Owners' and Users' Association, pointing out to the Minister that the case above referred to had occurred, and requesting that the circumstances be given his consideration.

MEETING OF DIRECTORS, 1st FEBRUARY 1933.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—*Ordinary Directors*—Mr George Buchanan; Mr Alexander Clark; Mr John E. B. Cowper; Mr Thomas Elder; Mr W. P. Gilmour; Mr John Hewetson; Mr J. E. Kerr; Mr James Kilpatrick; Mr James M'Laren; Mr Robert Miller; Mr Gavin Ralston; Mr John M. Roger; Mr J. P. Ross-Taylor; Mr T. Mercer Sharp; Major R. W. Sharpe; Mr A. A. Hagart Speirs; Major S. Strang Steel; Mr Phipps O. Turnbull; Mr Falconer L. Wallace; Mr T. G. Wilson; Mr James Wyllie. *Extraordinary Directors*—Mr Alexander Batchelor; Mr J. Belfrage Black; Mr Thomas Clark; The Hon. T. G. P. Corbett; Mr George Grant; Mr William C. Hunter; Mr James R. Lumsden; Mr William Meiklem; Mr Alexander Murdoch; Mr Robert Park; Mr John W. Prentice; The Hon. Walter T. H. Scott, Master of Polwarth; Mr John Stewart; Mr William Tod; Mr Archibald Whyte. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

The late Major Wellwood Maxwell of Kirkennan.

Before proceeding with the business of the Meeting, the Chairman referred, in sympathetic terms, to the death of Major Wellwood Maxwell of Kirkennan, who was a Director of the Society for a period of seven years—from 1895 to 1901. Major Maxwell, he said, was an outstanding figure in public affairs in Kirkcudbrightshire. He was well known for his interest in agricultural matters, but more especially in forestry, the woods on his estate at Kirkennan being visited by arboriculturists from all parts of the country. As a man, he was greatly respected and highly esteemed by all with whom he was associated.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to the family of the deceased.

Letters.

The following letters were submitted:—

"*James Archibald*" *Prize.*—A letter from Messrs Lane, Neave & Wanklyn, Solicitors, Christchurch, New Zealand, acknowledging receipt of the Society's acceptance of the "James Archibald" Prize Fund, and intimating that the donor, Mr James Archibald, died on 16th December.

The Secretary was instructed to write to the Agents expressing the Directors' regret at Mr Archibald's death and their sympathy with his relatives.

Threshing Engines.—A letter was read from the Minister of Transport, in reply to the representation agreed upon at last Meeting. In this reply, it was pointed out that Section 5 of the Locomotives Amendment (Scotland) Act, 1878, which was repealed by the Road Traffic Act, 1930, provided that every locomotive used on any highway should be constructed on the principle of consuming its own smoke, and that any person using any locomotive not so constructed, or not consuming as far as practicable its own smoke, should be liable to a fine not exceeding £5 for every day for which such locomotive was used on any such highway. The regulations in question, made under the Road Traffic Act, 1930, did not appear to impose any substantially more onerous requirements, and, in view of the danger to the public likely to be caused by the emission of smoke from steam-driven vehicles, the Minister would not be prepared to amend the regulations unless he were satisfied by adequate evidence that they caused unnecessary and unavoidable hardship to the operators of locomotives.

The Secretary was instructed to communicate the terms of this reply to the Scottish Traction Engine Owners' and Users' Association.

Dundee Show, 1933.

Assistant Stewards.—Assistant Stewards of the various departments were appointed as follows: *Cattle*—Mr Alexander Munro; *Horses*—Mr John P. Sleigh; *Sheep, Goats and Pigs*—Mr James M'Laren; *Forage*—Mr T. Mercer Sharp; *Grand Stands*—The Master of Polwarth; *Gates*—Mr James P. Brown; *Implements*—Mr P. O. Turnbull.

Forage.—A Minute of Meeting of Forage Committee, dated 1st February, was read and approved.

The Minute stated that the Committee recommended the acceptance of the offer by the Forage Supply Co., Ltd., Springfield Mills, Leith, to supply forage for the Show.

Catering.—A Minute of Meeting of Catering Committee, dated 1st February, was read and approved.

The Minute recommended that there be four Licensed Catering Stands at the Show, this being the usual number at all centres except Inverness.

As a considerable number of applications had been received for these stands it was recommended that offers be invited. The Committee had revised the Scale of Charges for meals and refreshments, and all Tenders submitted should be on the basis of the new scale.

It was further recommended that the Angus Branch of the British Women's Temperance Association be granted the usual privilege of a free site for a Catering Stand within the Showyard.

Proof of Prize List.—A proof print of the Prize List and Regulations was submitted and considered.

On the Motion of Mr T. G. Wilson, seconded by Mr John W. Prentice, it was agreed to reinsert a Class for Yearling Heifers in the Belted Galloway section.

The Prize List and Regulations were then approved for publication.

New Implements.—The following were appointed Judges of New Implements: Mr J. P. Ross-Taylor, Mungoswalls, Duns; Mr P. O. Turnbull, Bowmont, Dunbar; Mr John E. B. Cowper, Gogar House, Corstorphine.

Royal Visit.—The following Special Committee was appointed to make all the necessary arrangements in connection with the expected visit of the President, His Royal Highness The Duke of York, to the Show—Lord Provost William H. Buist, O.B.E.; Major Archibald Whyte; Mr Gavin Ralston; and the Chairman, Treasurer and Honorary Secretary, *ex officii*.

Special Prizes.—A number of Special Prizes were accepted, and votes of thanks accorded to the donors. Amongst these the following new Cups were given by Citizens of Dundee, per Dundee Business Club:—

"Dundee Citizens'" Perpetual Silver Challenge Cup, value about £50, for the best animal in the Ayrshire Classes, "Extra Stock" being eligible to compete.

"Dundee Citizens'" Perpetual Silver Challenge Cup, value about £50, for the best animal in the Large White Pig Classes, "Extra Stock" being eligible to compete.

Silver Medals to the winners of the above-mentioned Cups, as a memento of winning the Cups.

£1000 *Prize for New Implement.*

A Minute of Meeting of Implements Committee, dated 31st January, was read and approved.

The Minute stated that the Committee had considered the list of twenty-three entries received for the £1000 Prize for a New Implement or Machine. They had examined each individual entry, with a view to ascertaining if the conditions of entry had been complied with, and, as a result of this examination, they had decided that, in the case of two entries, the conditions had not been fulfilled, and they recommended that these entries be returned. The list of entries was accordingly reduced to twenty-one.

The Committee had also considered the question of Judges, and had decided that it was advisable that the Judges appointed should be outside the Directorate of the Society. The names of three suitable Judges were submitted, and their appointment recommended.

Consulting Veterinary Surgeon.

A Minute of Meeting of Science Committee, dated 1st February, was read and approved.

The Minute stated that, in accordance with the remit from the Board on 30th November, the Committee had taken into consideration the Motion adopted at that date, namely—" That the Directors consider the advisability of appointing a Consulting Veterinary Surgeon who should be added to the establishment of the Society in an advisory capacity."

After careful consideration and discussion, the Committee had decided, by a majority, to report to the Board of Directors that they did not consider it advisable to appoint a Consulting Veterinary Surgeon on the lines suggested.

Show of 1935.

The following were appointed a Committee to visit and inspect available sites for the Show of 1935 in the Aberdeen Show Division—Mr James Durno, Mr George Grant, Mr Robert Macmillan, Mr John W. Prentice, Mr J. P. Ross-Taylor, with the Chairman, Treasurer and Honorary Secretary, *ex officii.*

Argyll Naval Fund.

A Minute of Meeting of Argyll Naval Fund Committee, dated 31st January, was read and approved.

The Minute recommended the appointment of Colin Duncan Madden to fill the vacancy in the list of beneficiaries caused by the promotion of Mr H. C. D. MacLean to the rank of Lieutenant.

MEETING OF DIRECTORS, 1st MARCH 1933.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, in the Chair.

Present.—Ordinary Directors—Mr George Buchanan; Mr Thomas Elder; Captain Thomas Elliot; Mr W. P. Gilmour; Mr William Henderson; Mr John Hewetson; Mr J. E. Kerr; Mr James M'Laren; Mr Robert Macmillan; Mr Gavin Ralston; Mr John M. Roger; Major S. Strang Steel; Captain John C. Stewart; Mr Phipps O. Turnbull; Mr James Wyllie. *Extraordinary Directors*—Mr Alexander Batchelor; Mr J. Belfrage Black; Mr William C. Hunter; Mr James R. Lumsden; Mr Alexander Murdoch; Mr John W. Prentice; Mr William Tod; Mr Archibald Whyte. *Treasurer*—Sir Ralph Anstruther of Balcaskie, Bt. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—J. F. Tocher, D.Sc., F.I.C. *Consulting Engineer*—Professor R. Stanfield, A.R.S.M., &c.

The late Lord Lovat.

Before proceeding with the business of the Meeting, the Chairman referred, with deep regret, to the loss the Society had sustained through the death of Lord

Lovat, K.T., K.C.M.G., &c. Lord Lovat, he said, was President of the Society in the year 1911, a Vice-President on three occasions, in 1901, 1923 and 1931, and an Ordinary Director for a period of three years, from 1917 to 1919.

His Lordship took a prominent part in the public life, not only of the Highlands, but of the country generally. As a large landowner, he took a deep personal interest in the welfare of his tenants, and was held in the highest esteem throughout the wide area of which he was territorial head. As a farmer, he acquired distinction as a breeder and exhibitor of Pedigree Shorthorn Cattle. He also took a keen interest in Forestry, having been a member of the Forestry Commission for a considerable period, and Chairman of the Commission in 1927 and 1928. He devoted much of his time and ability to public affairs in the County of Inverness, of which he was Convener at the time of his death.

In the minds of farmers, his name would be associated with the formation and activities of the Scottish Agricultural Committee, which came into being in 1929. While the immediate results of the work of that Committee might have been disappointing, there was no doubt that its efforts went far to convince the Government of the dire necessity for some action to relieve distress amongst farmers, and so paved the way for those legislative steps which had been taken, and which it was hoped might still be taken, to relieve Agricultural distress.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to Lady Lovat and the family of the deceased.

The late Mr Thomas A. Buttar of Corston.

The Chairman also referred, with deep regret, to the death, since last Meeting, of a colleague on that Board—Mr Thomas A. Buttar of Corston. Mr Buttar's connection with the Society, he said, extended over a period of more than fifty years, he having been elected a Free Life Member in 1882, as a result of his having passed the Society's Examination for the Diploma in Agriculture. He was an Ordinary Director of the Society from 1921 to 1924, and an Extraordinary Director on several occasions.

Mr Buttar was one of the best known farmers in Scotland. He was a noted breeder and exhibitor of Shorthorn Cattle and Shropshire Sheep, his flock of Shropshires being recognised as one of the finest in the country. His services as a Judge were in demand both in this country and abroad. His cheerful disposition and sound practical knowledge of Agricultural affairs rendered him highly esteemed by a wide circle of associates, and by none more so than by the members of that Board. His passing was a loss to the Society and to Agriculture generally, which they deeply deplored.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to the family of the deceased.

Letter.

The following letter was submitted:—

Scottish Traction Engine Owners' and Users' Association.—Thanks for supporting the Association's representation to the Minister of Transport.

T.R.H. The Duke and Duchess of York.

The Secretary read the following letter from Rear-Admiral Basil V. Brooke, C.V.O., R.N., Comptroller to H.R.H. the Duke of York:—

11 Grosvenor Crescent,
S.W. 1,
February 7th, 1933.

Dear Sir,

His Royal Highness the Duke of York desires me to let you know that he will be very glad to visit the Show at Dundee on Wednesday and Thursday, June 21st and 22nd, and also preside at the General Meeting of Members to be held in the Showyard on Wednesday at 12 noon.

Her Royal Highness the Duchess of York will accompany the Duke on this occasion.—Yours faithfully,

B. V. Brooke, *Comptroller*.

John Stirton, Esq.,
8 Eglinton Crescent,
Edinburgh, N.B.

The Chairman said he was sure the Directors would be delighted to learn that both the Duke and Duchess of York were going to attend the Show on two days, and he was sure that their visit would go a long way towards making the Show at Dundee a great success.

£1000 *Prize for New Implement.*

The Secretary reported that the three gentlemen whom it had been decided, at last Meeting, to invite to act as Judges of the entries for the above Prize had now agreed to accept office. Their names were as follows: Professor J. A. Scott Watson, Oxford University; Mr John R. Dale, Auldhame, North Berwick; and Professor A. R. Horne, Heriot-Watt College, Edinburgh.

As it was proposed to commence the inspection of the Implements in the week beginning 3rd April, it was agreed to remit to the following small Committee to act with the Judges and Secretary in making the arrangements: Mr P. O. Turnbull; Mr J. P. Ross-Taylor; and Mr John E. B. Cowper.

Damage by Trespass.

Colonel F. J. Carruthers of Dormont reported that representatives of various Societies attended a Conference in Edinburgh on 21st February, convened by the Scottish Land and Property Federation. A full discussion had taken place, and it was remitted to a Sub-Committee to go further into the matter and report to a future Meeting.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 1st JUNE 1932.

SIR RALPH ANSTRUTHER of Balcaskie, Bart., Treasurer of the Society, in the Chair.

New Members.

One hundred and thirteen candidates were balloted for and admitted members of the Society.

Vacancy on Board of Directors.

Mr Alexander Murdoch, East Hallside, Chairman of Directors, moved the following recommendation of the Board of Directors: "That Mr William Henderson of Lawton, Coupar Angus, be elected an Ordinary Director of the Society for the Perth Show Division to fill the vacancy caused by the resignation of The Lord Scone."

The motion was seconded by Mr Archibald Whyte, Spott, Kirriemuir, and unanimously adopted.

Office-Bearers.

The following noblemen and gentlemen were elected office-bearers of the Society for the year 1932-33:—

President.—His Royal Highness The Duke of York, K.G., K.T., P.C., G.C.V.O.

Vice-Presidents.—The Duke of Atholl, K.T., G.C.V.O., C.B., D.S.O., Blair Castle, Blair Atholl; The Earl of Strathmore, K.T., G.C.V.O., Glamis Castle, Glamis; Lieut.-Colonel Sir John Gilmour, Bart., D.S.O., M.P., of Montrave, Leven; The Lord Provost of Dundee.

Ordinary Directors, 1929.—Mr William Henderson of Lawton, Coupar Angus; Mr A. A. Hagart Speirs of Elderslie, Houston House, Houston; Major Robert W. Sharpe of The Park, Earlston; Mr Thomas Elder of Stevenson, Haddington; Mr John P. Sleigh of St John's Wells, Fyvie; Mr T. Mercer Sharp, Bardrill, Blackford; Mr George Will, Acrehead, Dumfries; Mr James P. Brown, Dipple, Fochabers.

1930.—Mr James Kilpatrick, Craigie Mains, Kilmarnock; Mr J. P. Ross-Taylor, Mungoswalls, Duns; Mr Robert Miller, Ferrygate, North Berwick; Mr Falconer L. Wallace of Candacraig, Strathdon (1 Grosvenor House, Park Lane, London, W. 1); Mr J. E. Kerr of Harviestoun, Dollar; Mr Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive; Mr Charley Tinker, Kilmartin, Inverness; Mr John M. Roger, Balgove, St Andrews.

1931.—Major Samuel Strang Steel of Philiphaugh, Selkirk; Mr John E. B. Cowper, Gogar House, Corstorphine; Mr Alexander Forbes, Rettie, Banff; Mr

James M'Laren, Cornton, Bridge of Allan; Mr John Hewetson, Baltersan, Newton-Stewart; Mr Ian M. Campbell, Balblair, Invershin; Mr Alexander Clark, Strathore House, Thornton; Captain John C. Stewart of Murdostoun, Newmains.

1932.—Mr Phipps O. Turnbull, Bowmont, Dunbar; Mr James Durno, Crichie, Inverurie; Mr T. G. Wilson, Carbeth Home Farm, Balfron Station; Mr W. P. Gilmour, Balmangan, Kirkcudbright; Mr Alexander Munro of Leanach, Culloden Moor, Inverness; Mr Gavin Ralston, Glamis House, Glamis; Mr George Buchanan, Hunterhill Farm, Paisley; Captain Thomas Elliot, Thirlestane, Lauder.

Extraordinary Directors.—Mr Andrew Pollock (A. & W. Pollock), Mauchline; Mr William Meiklem, Bennochy Park, Kirkcaldy; The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick; The Hon. T. G. P. Corbett, Rowallan, Kilmarnock; Mr George Grant, Glenfarclas, Blacksboat; Mr John W. Prentice, Craigrie Farm, Clackmannan; Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire; Mr Robert Park, Brunstane, Portobello; Mr James R. Lumsden of Arden, Dumbartonshire; Mr Thomas Templeton, Sandyknowe, Kelso; Mr Alexander Batchelor, Craigie Home Farm, Dundee; Mr J. Belfrage Black of Tillywhaly, Milnathort; Mr Thomas A. Buttar, Corston, Coupar Angus; Mr F. W. Christie, Eden View, Cupar, Fife; Mr Thomas Clark, Muirtons, Perth; Treasurer William Frain, Dundee; Mr William C. Hunter of Arngask, Glenfarg; Mr John Stewart of Struthers, Woodburne House, Ceres, Fife; Mr William Tod of East Brackley, Kinross; Mr Archibald Whyte, Spott, Kirriemuir.

Treasurer.—Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.

Honorary Secretary.—Colonel F. J. Carruthers of Dormont, Lockerbie.

Special Grants.

Mr J. P. Ross-Taylor, Mungoswalls, Duns, moved approval of the following Special Grants which were recommended by the Board of Directors:—

(1) £200, for the current year, to the Animal Diseases Research Association.
(2) £100, for the current year, to the Glasgow Veterinary College.
(3) £30, for the current year, to the Highland Reel and Strathspey Society.

Mr John E. B. Cowper, Gogar House, Corstorphine, seconded, and the grants were approved.

Inverness Show, 1932.

Mr Ian M. Campbell, Balblair, Invershin, reported that arrangements for the forthcoming Show at Inverness, on 21st June and three following days, were well advanced. As previously reported, the town of Inverness had provided an excellent site at The Bughts Park. This was a new site, previous Shows having been held in the Victoria Park. It was beautifully situated between Tomnahurich and the River Ness, and within a mile of the centre of the town. The Town Council had also granted a free supply of water, and was cordially supporting the Society in its efforts to further the success of the Show.

A satisfactory entry of live-stock had been obtained. While the number of Cattle was down, compared with the last Show at Inverness in 1923, the number of Horses was about the same. On the other hand, Sheep showed a gratifying increase, there being 120 more entries than on the last occasion. Goats were more numerous, but Pigs had fallen off to some extent.

Implements, Machinery and General Exhibits had secured a good entry, the increase over the last Show at Inverness being about 600 lineal feet of stand frontage.

The Horticultural Section had again received gratifying support, and would provide an attractive exhibit. The Live Stock Judging Competition and the Buttermaking Competitions had also secured large entries.

There were two factors which it was believed would tend to render the forthcoming Show more successful than former Shows at the same centre. These were, the greater accessibility of Inverness by road, in view of the improvements and reconstructions which had taken place since the date of the last Show, and the earlier date of the Show, which rendered it easier for visitors to secure hotel and other accommodation. These facts, it was hoped, would tend to attract visitors in greater numbers and from a wider area, and, given favourable weather, the Show should attain a measure of success unequalled by any previous Show at Inverness.

Dundee Show, 1933.

Mr Archibald Whyte, Vice-Convener of the Shows Committee, reported that, as already reported, an excellent site for the Dundee Show in 1933 had been placed at the disposal of the Society by the Town Council of Dundee. The date of the Show had been fixed for the 20th-23rd June. Active arrangements for the Show would begin immediately after the Show of the present year.

It would give great satisfaction to the members of the Society to know that His Royal Highness The Duke of York had consented to honour the Society by accepting the office of President for the year. It was to be hoped that, when the date of the Show arrived, the Society would be further honoured by a visit of His Royal Highness and Her Royal Highness the Duchess of York to the Show.

Glasgow Show, 1934.

Mr James Kilpatrick, Craigie Mains, Kilmarnock, reported that the Directors had accepted an invitation from the Corporation of Glasgow to hold the Show of 1934 at Bellahouston Park. In addition to offering this excellent site, the Corporation had generously agreed to contribute a sum of 500 Guineas to the Show funds.

Agricultural Education.

Colonel F. J. Carruthers of Dormont, Convener of the Education Committee, reported on the Examination held at Leeds from 13th to 21st April for the National Diploma in Agriculture. 168 candidates presented themselves for examination; 37 candidates were from Scotland. As a result of the Examination, 43 Diplomas were awarded, 3 with Honours. Of the 168 candidates, 12 appeared for all the subjects, and of these 5 passed. 73 had passed certain subjects previously and were completing the Examination this year, and of these 38 obtained the Diploma. The remaining 83 presented themselves for groups of three, four, or five subjects, and of those 43 passed in the subjects for which they appeared and were entitled to appear for the remaining subjects in 1933 or 1934.

Foot-and-Mouth Disease.

Colonel F. J. Carruthers of Dormont stated that it would be recalled that last year, just before the Show, there was a very serious outbreak of foot-and-mouth disease, which started in Ireland and spread to England and Scotland, and which entirely ruined the Hundredth Show. The Government of Northern Ireland had traced, to their satisfaction at any rate, that outbreak to a cargo of broccoli which was landed at Leith towards the end of May.

Following upon that, the matter had been under discussion by the Board, and a resolution had been drafted and passed by the Board that day asking that these vegetables from countries where disease is prevalent should be prevented from coming in—that an embargo should be placed upon them. That resolution had been sent to the Royal Agricultural Society and the Royal Ulster Agricultural Society for their approval and co-operation.

In the opinion of the Board it would hardly be courteous to the Minister of Agriculture that they should publish the actual terms of the resolution before it got into his hands. Before it was sent they had to wait to see whether it met with the approval of the Royal Agricultural Society and the Royal Ulster Society, but he thought they could say that the resolution would appear in the Press at the same time as it reached the Minister of Agriculture.

Discolouration of Wool.

Major Robert W. Sharpe of the Park, Earlston, Convener of the Science Committee, reported that, at the request of the Skinners' Association, the Science Committee had had under consideration the damage caused to wool through discolouration by bloom dips used in preparing sheep for shows and sales. The Society's Consulting Chemist had made exhaustive experiments, and the results proved that the colouring matter in practically all bloom dips destroyed or damaged wool for manufacturing purposes.

Dr Tocher's report had been circulated to the various Sheep Breed Societies and dip manufacturers, and a conference was being called next November to see if there was any practical method of getting over these difficulties.

Science.

Report by Chemist.

In the unavoidable absence of Dr J. F. Tocher, Consulting Chemist, Major Robert W. Sharpe submitted a report on the work in the Chemist's department during the past six months. The substance of Dr Tocher's report appears on pp. 181-187 of this volume.

Vote of Thanks.

On the motion of Mr Alexander Murdoch, a cordial vote of thanks was accorded to Sir Ralph Anstruther, Bt., for presiding.

GENERAL MEETING OF MEMBERS HELD IN THE SHOWYARD, INVERNESS, 22ND JUNE 1932.

The DUKE OF PORTLAND, K.G., P.C., G.C.V.O., President of the Society, in the Chair.

The Chairman said he assured them that he greatly appreciated the honour which was done him when he was invited to be President of the Highland and Agricultural Society for that year, especially as he had the honour of following His Royal Highness the Prince of Wales, who not only honoured the Centenary Show held last year at Edinburgh by his presence, but also took the Chair, and made an eloquent and eminently practical speech at the meeting held on the showground, where, notwithstanding the standstill Order for cattle, he understood a highly successful show was held. He was glad, indeed, to congratulate the Society upon that happy result.

At the same time he congratulated the Society on being so fortunate as to obtain the services of His Royal Highness the Duke of York to act as President of the Show for next year, when it was to be held at Dundee. He hoped a most successful gathering would take place under His Royal Highness's presidency.

He was glad, indeed, to have the opportunity of being President during the year when the Show was being held at Inverness, not so very far from his beloved home in Caithness, where he had spent, without a break, fifty-two exceedingly happy seasons, and where, he trusted by God's mercy, he might be spared to spend a season or two more.

But whilst he thought it a great honour to have been chosen to fill the Chair that day, he candidly admitted that he was at a complete loss to know why they chose him rather than one of the great Highland landowners and chieftains whose names had been so long and deeply respected in that district. He was proud, however, that though he bore an undoubtedly English and originally Dutch name, yet, for all that, he was a Scotsman by birth, for he was born in Perthshire, and he was equally proud, if not prouder still, that his wife was a Scotswoman, for she also came into the world in Perthshire, not far from where he was born himself, at Murthly. He believed she was now—he did not know whether to call her chieftain or chieftainess, or simply head of the Clan Dallas, and in consequence she was entitled not only to wear the tartan of the clan but also, if she chose, to sport the eagle plumes on her bonnet. He wished she were there, for he was sure she would cordially agree with him when he said that they both of them had passed, and thank God still pass, by far the happiest time of their lives in the county of Caithness and among the hills and glens of bonnie Scotland. They both of them loved the north country, and, in return for the great pleasure and health which they gained by their residence in it, they desired, of course, to render it and its inhabitants all the practical help and service that lay in their power. He did not think they could possibly render that help better than by doing something to improve the lives of the people themselves, as might be effected by improving the quality, and therefore the value, of their farm stock, which he knew was the chief aim and object of the Society. He desired most heartily to congratulate the Society on all the excellent work it had done for agriculture in Scotland, both in the Highlands and in the Lowlands, during the century that had passed since it came into existence. He hoped it would continue to carry on its good work for at least another century to come.

He thought it was interesting to note—and it showed the vast growth of the Society—that at the first Highland Show held at Inverness in 1831 the premiums amounted to only £318, whereas at the present Show they amounted to no less than £6845. The membership of the Society had also grown in a corresponding manner; a hundred years ago there were only 1770 members, and to-day there were 9900. This, he believed, was the twelfth occasion on which the Show had been held in Inverness, and on the last occasion, in 1923, the premiums amounted to a little over £5450. In the early days of the Show there must have been great difficulty in transporting the stock to the Show, for the first train that ran into Inverness did not do so until November 1855, and that train only started from Nairn. This year it was reported that the weight of waggons alone conveying the stock to the Show was no less than 4000 tons, and the average distance which the stock itself had travelled exceeded 100 miles.

He was very proud that this was the second time in his life that the Society had honoured him by appointing him President. As long ago as 1888, when the Show was held in Glasgow, he was elected to fill the office of President. He well remembered presiding at the annual meeting of members, for during that meeting a most violent altercation all of a sudden simply blazed up between two of, he believed, the oldest and perhaps the most respected members of the Society. He never before or since saw two old men get angry so quickly. One of them was addressing the meeting—it might possibly have been on the superior merits of Blackfaced sheep compared with Cheviots—when up jumped the other old member, and he interrupted the speaker in a most violent and, as his Grace considered, in a most uncalled-for manner. He had until then no idea that timid sheep could provoke such violent feelings or that such fiery tempers could be excited as to their rival and woolly merits. He could not remember the names of the two disputants, and if he did, nothing in the world would induce him to give them away; but when he shut his eyes he could still visualise the appearance of those two old gentlemen. One was very tall, lanky and extremely lean, the other was squat and square. Both of them had scant red hair, and both wore kilts and carried skein dhus. Every moment he expected to see the skein dhus flashing in the air. Vainly he cried out—he was only a very young man at the time—"Order, order." The two angry old fellows paid no attention to his feeble and perhaps southern remonstrance. He might just as well, perhaps better, have been one of the sheep bleating on the hills. Their Highland blood was aflame, their eyes flashed hatred and defiance. So he turned in his extremity for advice and help to an elderly member who sat on his right. To his consternation the elderly member produced a silver ear-trumpet and roared out, "What do you say?" His Grace yelled into this infernal thing, "What do you advise me to do?" He replied at the top of his voice, "Tell the twa disputatious old fools to gang to the deil." Naturally he did not dare to convey such a message, as the ages of the men were at least twice that of his at that time; but fortunately the roar of laughter which greeted what seemed to him a most appropriate remark had the much desired effect. The two disputing old fools joined in the mirth, and all was well. As long as he lived he would never forget that scene. His nerves had not even yet recovered from it, and he had almost to ask the Secretary to provide him with a Highland cocktail before he took the Chair that day. He was confident that no such soul-stirring episode would take place on this occasion. If it did he would appeal to his Highland friends for their help and advice, and he had no doubt that he should not appeal in vain.

The Secretary of the Society had kindly supplied him with a copy of the speech he made on that occasion, forty-four years ago, and he noticed that he then remarked:—

"In these days of depression I think it is the duty of every landlord to do everything in his power, so far as his means will permit, to enable tenants to weather the storm, more especially as the tenants themselves in almost every instance that has come under my notice were struggling with courage to fight against the adverse times. I consider that the landlords could not promote their own or their tenants' interest in a much better way than in supporting the Highland Society and other kindred associations, which brought under their notice the improvements in agriculture, which would enable them to turn an honest penny."

All he could say was that these were still his considered opinions after the forty-four years which had elapsed since he spoke those words. But, alas! since those days the times had vastly changed, and certainly not for the better. Owners of land were no longer in a position to help their tenants as they used to do. In fact, large owners of land in these days were much fewer in numbers, and had much fewer tenants to assist. They themselves, too, were no longer able to help their tenants as they did in the past. No doubt the spirit to do so was still willing, but, alas! the purses were empty.

With regard to the present position of agriculture, the Government, in his opinion, had done perhaps—he said 'perhaps' advisedly—as much as was possible at present to do; but, of course, like Oliver Twist, the farmers in this country were still asking for more. Many people, he believed, considered, and considered rightly, the plans of the Government were like the proverbial curate's egg—good only in parts. What was wanted, however, was a scheme that was good all through. In fact, they wanted an egg that was fit for a bishop, and not only for a curate.

Talking of eggs reminded him that not long ago he read a speech delivered in Glasgow or Edinburgh by Miss Stroma Sinclair, who was so well known and liked in the county of Caithness. In that speech she outlined what seemed to him to be a most excellent, prudent and practical scheme for the assistance of the poultry industry. He believed that a similar scheme was already successfully working in the Orkney Islands, and Miss Sinclair desired to see it adopted on the mainland as well. It was, of course, much too big and important a scheme for him to go into details at that moment, but he really thought it was a scheme well worthy of consideration. Miss Sinclair had already helped, and was helping, to start a Poultry Society in Caithness, and he was sure she would be very glad to give all the information she possessed. The Government, in his humble opinion very rightly, urged the agricultural interest to combine and to organise, and he had no doubt that this was very good advice. He could not help thinking that Miss Sinclair's scheme was a very good example indeed of one way in which it might be done. He thanked them most heartily for the extreme kindness and patience with which they had listened to him, and once again he thanked them for the honour they had done him by electing him President.

Votes of Thanks.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman of Directors, moved a vote of thanks to the Town Council of Inverness. They all regretted, he said, that Provost Macdonald was unable to be present on account of illness, and they expressed their sympathy and the hope that he would soon be restored to perfect health. He had been at Inverness on several occasions in connection with the visit of the Highland Show, and Provost Macdonald had taken a great interest in the work of preparation and was most anxious to do everything he could to make the Show a big success. He also expressed the Directors' satisfaction that ex-Provost Sir Alexander MacEwen had been honoured by the King, and he offered Sir Alexander their congratulations. They had received intimation from the Town Clerk the other day that the Council had agreed to give a handsome donation to the funds of the Society, for which their Hon. Treasurer, Sir Ralph Anstruther, was most grateful. He sincerely hoped that the Show would have a credit balance this year. They would agree with him that of all the Shows that the 'Highland' had held, they had never had a more beautiful site than the present one. He moved the following resolution: "That a cordial vote of thanks be accorded to the Provost, Magistrates and Town Council of Inverness for the excellent site provided for the Show, for their co-operation and assistance in promoting the success of the Show, and for their financial contribution to the Show funds."

Mr Alexander Munro of Leanach, Inverness, Convener of the Shows Committee, in seconding, said he endorsed every word Mr Murdoch had said. Provost Macdonald was not only the civic head of Inverness but also a practical farmer, and they would understand how deeply he regretted being unable to be present. Every member and official of the Town Council had given them very valuable assistance, and he had found his duties as Chairman of the Shows Committee most pleasant indeed.

The vote of thanks was heartily accorded.

Bailie A. A. Noble, Inverness, said it gave him very great pleasure to attend there in the absence of their esteemed Provost. He thanked Mr Murdoch for the kindly reference he had made to Provost Macdonald, and would convey the Society's sympathy and good wishes. It was a matter of great satisfaction not only to the Town Council of Inverness, but to the community generally, that all the facilities which they had been able to offer had proved so satisfactory. The farming industry gave a great deal of business to Inverness, and they were always delighted to do everything they could for agriculture. Although their Common Good Fund had not permitted of Inverness giving the Society as large a donation to the prize fund as was received from the cities in the south, in the matter of a site Inverness could hold its own. As long as they maintained the name of the Highland Society he could assure them of a real Highland welcome and also of every possible assistance.

Sir Ralph Anstruther of Balcaskie, Bt., Treasurer of the Society, proposed a vote of thanks to the Duke of Sutherland, Convener, and the members of the Local Committee of Management for the efficient and successful manner in which they had carried out the arrangements for the Show. While it might be called in a sense a stereotyped resolution, it was one which it was eminently necessary to pass, because the success of any Show, wherever it was held, depended very largely, if not entirely, upon the efforts of the Local Committee. The experience of the Society had been that in every case where a Local Committee was formed they had got from them the utmost goodwill and the most practical good work. As they were aware, the Directors of the Highland and Agricultural Society were appointed by the various districts and came from all parts of Scotland. It followed that they could not be expected to have the local knowledge and the local prestige which allowed of the Show being successfully prepared, and therefore it was an absolute necessity that they should ask persons who resided in the neighbourhood of the places where the Show was to be held to give them the benefit of their services, and they did not ask in vain. The Society could have had no more efficient Convener of the Local Committee than the Duke of Sutherland, and he was sure his Grace had been supported by his Committee with the utmost goodwill. The work done by such Local Committees was entirely voluntary, and it was a fine example to the world that there were still to be found men who were ready to give voluntary service for a good public purpose. The Local Committee on this occasion had acted in such a manner that they deserved the fullest recognition of the good work they had done. He hoped the Duke of Sutherland and his Committee would realise that the Society felt it could not have been better done.

Mr J. P. Ross-Taylor, Mungoswalls, Duns, in seconding, said he was very glad to be associated with that motion. He felt, however, that his appreciative vocabulary could not go further than Sir Ralph Anstruther's. The Local Committee was a hard-working body. On this occasion it might be that hope deferred had stimulated their efforts to a greater degree, but he thought they would all agree that their efforts had been most successful.

The Duke of Sutherland, in responding to the vote of thanks, said he should like personally also to take that opportunity of thanking the members of his Committee for the energy and efficiency with which they performed the duties devolving upon them. The permanent officials of the Society had ably assisted them. What they as a Committee desired was that everything should run smoothly during the period of the Show, and, from what he had seen, he ventured to predict that such would be the case. Agriculture, like all great industries, was passing through bad times. They had all been hard hit, but it was indeed gratifying that members of the Society should have been able to produce such fine exhibits of live-stock, machinery and implements as had been seen at the Show. Three years ago there had been a great outcry, and no doubt with some justification, that Inverness and the north had been deprived of the honour of housing the Centenary Show of the Society. That was a matter of past history, but they could now say that the first Show of the second century was being held at Inverness, and was going to be a great success. Let them hope that when the next Centenary Show came along, Inverness would get its due without any question, and that the local Committee of that time might have as pleasing an experience as the present Committee had had. He was proud to think that he had a personal association with the Highland and Agricultural Society of Scotland. A Countess of Sutherland had helped to originate the Society many years ago, and his great-grandfather had been President from 1837 to 1841. So, needless to say, it was to him a labour of love to do anything he could to help on the work of that great Society.

Mr James Durno, Crichie, Inverurie, moved that the Society express its appreciation of the satisfactory arrangements made by the railway companies for the expeditious transport of stock, implements and visitors to the Show. When he told them that everything had been carried out without one single hitch, they could realise how splendid and efficient were the arrangements they had made on behalf of the Society. He thought they ought also to express their thanks to the railway companies for the cheap fares which they had extended to all parts of Scotland and also to England and Ireland. The efficient arrangements had been carried out by the splendid support which the railway companies had had from the local officials.

Mr Ian M. Campbell, Balblair, Invershin, said it would be difficult to find a body of men who had carried through their job so energetically and so satisfactorily to all concerned as the officials of the northern section of the L.M.S. Railway.

Mr W. Yeaman of the L.M.S. Railway, who replied, said it was something more than a duty, it was a pleasure, to the railways to be associated with the Highland and Agricultural Society at their annual shows. Notwithstanding the difficult times the railways, in keeping with other industries, were passing through, they had played some part in the increasing importance and the increasing success of these annual shows; and notwithstanding the controversy as to what was the best and most effective means of inland transport, they thought the railways would continue to be the main means of inland transport. The railways hoped and intended to continue to contribute to the success of the Highland and Agricultural Society's Annual Show.

Date of Annual Show.

Mr W. J. Reid, Fordhouse of Dun, Montrose, said there was a very important matter which he had been asked to raise, and that was the date of the Show. As President of the Society of Border Leicester Sheep Breeders he had been asked to state that at a meeting held there on the previous day the Border Leicester Society had come to the conclusion that the present date was unsuitable for the general body of their members. They submitted that if the Highland Society wanted to have the best exhibit of Border Leicester stock a later date was more suitable. His Society did not in any way wish to dictate to the Highland and Agricultural Society when the Show should be held, but they thought the Directors of the Highland and Agricultural Society would wish to know what was the most suitable time to hold the best exhibition of the various kinds of stock. The President told them in his speech that day that the chief end of the Society was the improvement of stock. He (Mr Reid) humbly submitted that that being so the date for the Show must be the most suitable for the general body of exhibitors. It was quite realised that the Society had many different matters to consider in fixing the date. They must consider the railway arrangements, they must consider the hotel arrangements, and they had also to consider the most suitable date for the members of the Society to attend the Show. But he did think that the members of the Highland and Agricultural Society were a sporting lot and that they would wish to come to the Show at the time when the stock would be in the best condition for exhibition. Speaking only for one breed, he would like to say that the old date of the Show was more suitable than the present. Everyone at the Border Leicester Society's meeting the previous day had agreed to that, with the exception of one man, and he was a Director of the Highland Society.

Mr Andrew Douglas, Saughtree, Newcastleton, said he had been asked by the members of the Cheviot Flock-Book Society to attend that meeting and to support the Border Leicester breeders in the views they put forward. He would like to point out that the bringing forward of the best class of exhibits, which they would like to put before the Directors and the public, had become an almost impossible proposition to breeders. He would ask the Directors, in considering this question, to keep in mind that one of the great foundations of the Cheviot stock was the ewes on their various farms. When these old ladies were doing their duties well they were not in a fit state to exhibit in their wool. In 80 or 90 per cent of them there was a weakness in their clothing, and the breeders would prefer a little later date when that old wool could be removed, and the sheep could be shown in their natural state with a little new fabric. They had tried as an experiment a class for lambs, and he was sure the Directors and the public were agreed that that had been a most successful class, but the putting forward of the date of the Show had unfortunately wiped out practically the exhibits from the regular hill stock. Lambings which did not begin till the middle of April made it impossible to bring these babies in the perambulator stage to be exhibited at the national show. A few weeks at this time of the year, with the flush of grass and the benefits of the season, would bring them almost from the baby stage to at least the schoolboy stage—something which could be taken from home and which people would be able to look at and appreciate. These were some of the considerations which made the members of their Society unanimous in asking the Directors to consider the advisability of putting back the date of the Show. He could assure them that it would be very difficult indeed to select a date which fitted the hillmen better than one round about the old date of the Show. The sheep shearings were finished, and the men engaged in sheep-breeding were all free to have a holiday for a day or two and to enjoy themselves at the Show. He hoped the Directors would keep some of those facts in view when the time came.

The Chairman said he was perfectly certain the Directors, as first-rate business men and courteous gentlemen, would be very glad to consider the matter that had been brought before them. He was very glad to congratulate them all on the fact that sheep did not create the feelings that they used to do.

Mr Alexander Murdoch, Chairman of Directors, said the question of whether the end of June or the end of July was the more suitable time for the Show had been considered on two different occasions by the Directors. At the meeting of the Directors when the present Show was fixed it was duly moved and seconded that it should be held at the end of June. An amendment was moved and seconded that the Show be held at the end of July. From the Chair he put it that he could not allow such an important question to be decided without discussing it from every angle—from the angle of the public, of implement exhibitors, and of horse, sheep and cattle exhibitors. On the directorate they had representatives from all the different breeds of sheep, cattle and horses, and after the matter was fully discussed, and all the facts weighed for and against, it was the unanimous decision of the Directors that the end of June was the most suitable date. They had to keep in view that the question was to some extent dependent on the Royal Show in England. In former years that Show was always held in the last week of June. Now on some occasions it was the first week in July; on other occasions it was the second week in July—he presumed to suit the interest of royalty. That had to be carefully considered, because, if the Royal Show was in the second week of July, and keeping in view that there must be at least one clear week between the Royal Show and the Highland Show, that meant about the third, or probably the fourth week in July. In recent years it had been most difficult in visiting the larger centres to get a suitable site, and when they visited Glasgow, Dundee, or Edinburgh they must keep clear of the trades holidays in these districts, otherwise they would have a most unsuccessful Show so far as attendance was concerned. They must all agree that they had to take into account the question of attendance, because without a good 'gate' they could not carry on a successful show and give handsome prizes to the exhibitors of stock. They had also to take into account the railway companies, who on those occasions when the Show was visiting the bigger towns had expressed the wish that the Society, as far as possible, should keep clear of the holiday periods. He did not think it was necessary to say much more, but he could tell the two gentlemen who had spoken that their representations would again receive the most careful consideration of the Directors. The Directors had not the slightest desire—there was not a single Director on the Board had any desire—to ride rough-shod over any of the Breed Societies.

So far as the Show of next year was concerned there could be no question of reconsidering the date. That had been fixed for the third week in June, after consultation with the Duke of York's private secretary, after consultation with the City of Dundee, and after an expression by the breeders of the various dairy breeds of cattle that the Directors should intimate the date as early as possible so that they would have an opportunity of preparing their cattle.

Might he remind sheep breeders of the Show in Kelso in 1926 which was held in the last week of June. It was one of the most successful shows from the exhibitors' point of view, from the point of view of attendance, and for the great entry by sheep breeders. He quite agreed there was something to be said in their favour, and also in favour of other breeds, particularly for some classes of their stock, that June was not the best date, but when everything was taken into account it was the considered opinion of the Directors that June was the appropriate date for the Show.

Vote of Thanks to Chairman.

Mr A. A. Hagart Speirs of Elderslie, Houston House, Houston, in moving a vote of thanks to their President, said they had shown his Grace what they thought of him. They had placed him between the Prince of Wales and the Duke of York, and a man was known by the company he was placed in. They had to thank his Grace for the services he had rendered to the Society and also to agriculture and Scotland in general.

Mr W. J. Reid seconded, and the motion was cordially agreed to.

The Chairman acknowledged the kindly reception the members had accorded to him, and said he felt very proud of having once again had the honour of being President of the Society.

ANNIVERSARY GENERAL MEETING, 4TH JANUARY 1933.

Lord Provost William H. Buist, O.B.E., Dundee, Vice-President, in the Chair.

New Members.

Three hundred and twenty-three candidates for election were balloted for and admitted members of the Society.

The Secretary said that the membership of the Society at the beginning of 1932 was 9790. During the year they lost, through death, resignation and other causes, 405 members. New members elected during the year numbered 260, thus bringing the membership at the end of the year to 9645. With the election that day of 323 new members, the roll of the Society reached a total of 9968, which was 192 in excess of the figure at the corresponding date last year. In view of the fact that other large Societies had suffered heavy losses in membership, he thought that the Society was extremely fortunate.

The Chairman said he was sure they all appreciated what the Secretary had said regarding the very satisfactory state of the membership. He thought those who were in charge of the Society's affairs were to be congratulated on maintaining its efficiency at the present time.

Vacancy on Board.

Mr Alexander Murdoch, East Hallside, Hallside, Lanarkshire, Chairman of Directors, moved the following recommendation of the Board of Directors: That Mr James Wyllie, Tinwald Downs, Dumfries, be elected an Ordinary Director of the Society for the Dumfries Show Division, to fill the vacancy caused by the death of the late Mr George Will.

The motion was unanimously adopted.

Finance.

Sir Ralph Anstruther of Balcaskie, Bart., Treasurer of the Society, submitted the Accounts of the Society for the year to 30th November 1932. The receipts for the year from all sources reached a total of £21,668, 2s. 6d., and the payments amounted to £23,724, 1s. 9d. Annual subscriptions amounted to £2250, 16s. 6d., and life subscriptions to £672. In the past year the expenditure on educational work amounted to £219, 8s.; on the work in the chemical and veterinary departments, £480, 13s. 3d.; investigation into discolouration of wool, £194, 6s. 11d.; on the Society's 'Transactions,' £1519, 6s. 5d.; premiums and medals for local shows and district competitions, £641, 6s.; and certificates and medals for long service, £163, 1s. A sum of £453, 3s. was given in special grants, including £200 to the Animal Diseases Research Association; £100 to Glasgow Veterinary College; and £100 to the Scottish Agricultural Organisation Society.

He moved approval of the following special grants: £100 for the current year to the Scottish Agricultural Organisation Society, and £10 to the Scottish Society for the Prevention of Cruelty to Animals.

Mr P. O. Turnbull, Bowmont, Dunbar, seconded, and the Accounts and Special Grants were approved.

Argyll Naval Fund.

Mr James M'Laren, Cornton, Bridge of Allan, submitted the report on the Argyll Naval Fund for 1931-32, which showed that the income for the year amounted to £327, 10s. 5d., while the expenditure was £302, 8s. 6d., comprising grants of £40 each to seven naval cadets, £20 to one naval cadet and £2, 8s. 6d. for miscellaneous expenses.

Inverness Show, 1932.

Captain Thomas Elliot, Thirlestane, Lauder, reported that the Society's One hundred and first Show was held at Inverness on Tuesday, 21st June, and three following days. For substance of the Report, see page 249 of this volume.

Dundee Show, 1933.

Mr Archibald Whyte of Spott, Kirriemuir, Convener of the Shows Committee, reported that arrangements were proceeding satisfactorily for the One hundred and second Show to be held that year at Dundee. The date of the Show had been fixed for the 20th to 23rd June inclusive.

As previously reported, an excellent site for the Show had been placed at the disposal of the Society by the Town Council of Dundee at Station Park. The site was level and convenient of access from the town. The Town Council had also generously agreed to give a grant of £1000 to the Show Funds, to provide a supply of water free of charge and to make arrangements whereby both gas and electric current would be available on the Showground. They were also co-operating in an enthusiastic manner in all efforts to promote the success of the Show.

The Prize List, which was in course of preparation and would be issued in February, was on the usual liberal scale. A sum of over £3900 was being offered in prizes from the Society's own Funds. This compared with £3460 at Perth Show in 1924. In addition, there were the usual large number of valuable Challenge Cups, Medals and Special Prizes, besides prize money contributed by Breed Societies and private donors. In particular, mention might be made of a number of new valuable Challenge Cups, one of which would be presented by the Angus Agricultural Association for Aberdeen-Angus Cattle; one by General Sir Ian Hamilton, G.C.B., for Belted Galloway Cattle; and two Cups by the citizens of Dundee, the exact particulars of which were not then available.

In view of the fact that His Royal Highness The Duke of York had honoured the Society by accepting the Presidency for the current year, and that it was hoped the Duke and Duchess would further honour the Society by their presence at the Show, the Directors believed that, if favoured with good weather, the Show at Dundee would be an undoubted success.

Mr J. Milne Henderson, Edinburgh, said he thought they should congratulate Dundee on the progress they had made in regard to the Show and on the handsome contribution they had given. The deficit of £3254 upon the Inverness Show was certainly very disappointing. At the same time he thought it was well worth while to go to Inverness to show their interest in the Highlands. Dundee was uncommonly well situated, and under such an active Lord Provost as their friend in the Chair, he felt sure they would reap a very large benefit by going there. With good weather, and under the guidance of Lord Provost Buist, to say nothing of the expected Royal visit, he felt sure that the meeting at Dundee would put their Society into good heart for the days that were to come.

The Chairman said he could assure Mr Milne Henderson that Dundee would do its best to make the Show a success.

Glasgow Show, 1934.

Mr James Kilpatrick, Craigie Mains, Kilmarnock, reported that, as previously intimated, the Directors had accepted an invitation from the Corporation of Glasgow to hold the Show of 1934 at Bellahouston Park. In addition to offering that excellent site, the Corporation had generously agreed to contribute a sum of 500 guineas to the Show Funds.

Show of 1935.

Mr James Durno, Crichie, Inverurie, moved the following resolution, which had that day been adopted by the Board of Directors: "That provided a suitable site is available, and satisfactory financial and other arrangements can be made, the Society's Show of 1935 be held in the Aberdeen Show Division."

Mr Durno said the resolution was brought forward a year sooner than it otherwise would have been owing to the Royal Agricultural Society's Show having been fixed for Newcastle in 1935. The Directors representing the Border Show Division had unanimously asked that the Show of 1935 be not held in the Border Division that year. The Society had a very cordial and hearty invitation from the Lord Provost of Aberdeen to hold the Show there in 1935. He could assure them that not only the Town Council of Aberdeen but also all in the Show Division would do their very best to make the Show a success.

Mr George Grant, Glenfarclas, Blacksboat, seconded, and the motion was unanimously agreed to.

Grants to Local Societies.

Mr James R. Lumsden of Arden, Dumbartonshire, submitted the report on District Shows and Competitions, showing that in 1932 grants of money and medals had been given in 89 districts. The total expenditure under this head amounted to £1012, 10s. 3d. For the current year the Directors proposed the following grants: 26 districts for grants of £12 each for cattle, horses and sheep, and 22 districts in intermediate years, with a grant of three silver medals to each; 14 districts for grants of £15 each for stallions; 5 districts for grants of £3 each; special grants of £10 each to 15 Federations of Scottish Women's Rural Institutes; £20 to Kilmarnock Cheese Show; £20 to Northern Arts and Crafts Society; a gold medal and silver medal to the British Dairymaids' Association; three silver medals for Sir John Fleming Cup Stackyard Competition; 9 districts for two medals each; £8 and eight silver medals to the Scottish National Union of Allotment Holders; 4 districts for grants of £3 for cottages and gardens; 3 districts for silver medals for cottages, gardens, or garden produce, &c.; long service certificates and medals, say £161, 3s. 9d., and the usual medals for ploughing and hoeing competitions, say £127, 8s. 9d., making the total sum offered in 1933 £1126, 5s. 3d.

Agricultural Depression.

Mr J. P. Ross-Taylor, Mungoswalls, Duns, reported that the Society was represented, along with the other agricultural organisations in the country, on the deputation in November last to the Minister of Agriculture and the Secretary of State for Scotland. The details of the proceedings, he thought, were generally known. Major Elliot, who was then a comparatively new Minister of Agriculture, had, three days previous to their going to London, somewhat clipped the wings of the deputation by making a pronouncement in regard to the quota for beef and mutton. He thought he was right in saying that those of them who were on the deputation came from their meeting with Major Elliot with a feeling that at last they had a Minister of Agriculture who knew something about agriculture and its wants, and that if something was not done for agriculture it would not be Major Elliot's fault. Later in the day they met Sir Godfrey Collins, Secretary for Scotland, and they went into more detail with him as to what was required for Scottish agriculture. Their chief request to him was regarding the dumping of foreign cereals and cereal products in this country. They also met the Policy Sub-Committee of the Agricultural Committee of the House of Commons. That was a very interesting meeting, because obviously the members of that Committee were out to learn. They asked a large number of questions in regard to the different points raised, and most of the speakers appeared to be satisfied that the deputation did have a case. Altogether the deputation came away satisfied with their day's work in London, and with the feeling that if something could be done for agriculture it would be done.

The Chairman said they were very much indebted to Mr Ross-Taylor and the other members of the deputation for the services they had rendered to the Society.

Education.

Colonel F. J. Carruthers of Dormont, Lockerbie, Convener of the Education Committee, reported on the results of the thirty-seventh Examination held during September last for the National Diploma in Dairying. At the Examination in England there were 63 candidates, of whom 31 obtained the Diploma and 32 failed; at the Examination at Auchincruive, Ayr, there were 41 candidates, 21 obtaining the Diploma and 20 failing. No Diploma with Honours was awarded at either centre. Of those candidates who failed, 18 at Reading and 9 at Auchincruive failed in not more than three subjects, and these will be permitted to reappear for the subjects in which they failed at the corresponding Examinations this year. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the Examination held last April, will be published in the next volume of 'Transactions.'

The Examinations for these Diplomas would again be held during the current year.

The Society's Examination for first and second-class certificates in Forestry would be held on 7th, 8th and 9th March next, provided a sufficient number of candidates presented themselves for examination.

With reference to the National Diploma in Dairying, Colonel Carruthers said he would like to draw the attention of the meeting to a new departure which was being made that year. Representations had been made that taking the whole examination at one sitting involved an undue strain on some of the candidates. To obviate this candidates would in future have the option of taking it in two parts. The main part of the examination would have to be taken as before at the first sitting. That part comprised the following subjects: Principles of Dairying, Dairy Factory Management and Engineering, Dairy Farming, Dairy Hygiene, Practical Cheese-making and Butter-making. Candidates who wished might postpone taking the other three papers—Chemistry and Physics, Bacteriology and Book-keeping—till a subsequent year. The Board hoped that that arrangement might lighten the labours of some of the candidates.

Science.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, reported on the work of the Department during the past six months.

The substance of Dr Tocher's report appears on pp. 181-187 of this volume.

Vote of Thanks.

Mr Alexander Murdoch, Chairman of Directors, in moving a vote of thanks to Lord Provost Buist for his conduct in the Chair, said that Lord Provost Buist was taking a very active interest in the affairs of the Society and in everything connected with the visit of the Society to Dundee in the month of June, which augured well for the success of the Show.

The vote of thanks was heartily accorded.

Lord Provost Buist, in acknowledging, said he understood when he was appointed Vice-President it was merely an honorary position, but he must say he was keenly interested in the work of the Society. While they gave him, as Chairman of that meeting, a vote of thanks that afternoon, he would like to say that the Society was very fortunate in the Chairman of its Directors and in the body of Directors they had appointed to carry on the work from month to month, and that they deserved the heartiest thanks of the members of the Society.

APPENDIX

PREMIUM BOOK

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

1933

CONTENTS.

PAGE

General Notice 3
Constitution and Management 3
Privileges of Membership 4
Membership 5
Officers and Directors for 1932-1933 6
Committees for 1932-1933 8
Representatives on Other Bodies 13
Meetings 14
General Show 14
Dates of Examinations 15
National Diploma in Agriculture (N.D.A.) 16
National Diploma in Dairying (N.D.D.) 26
Certificates in Forestry 36
Veterinary Certificates and Medals 46
Chemical Department 47
Botanical Department 58
Entomological Department 60

PREMIUMS OFFERED.

GROUP I.—REPORTS.

General Regulations 61

1. The Science and Practice of Agriculture—For Approved Reports on—
    1. Rural Economy abroad, susceptible of being introduced into Scotland 62
    2. Other suitable subjects 62
2. Estate Improvements—For Approved Reports on—
    1. General Improvement of Estates by Proprietors . . 62
    2, 3, 4, 5, and 6. Reclamation of Waste Land and Improvement of Natural Pasture by Proprietors or Tenants . . 63

PREMIUMS OFFERED (*continued*)—

3 HIGHLAND INDUSTRIES—FOR APPROVED REPORTS ON—
1. Best mode of treating Native Wool, &c. . . . 63
4. MACHINERY—FOR APPROVED REPORTS 64
5. FORESTRY—FOR APPROVED REPORTS ON—
1. Planting on deep Peat-bog 64

GROUP II.—DISTRICT GRANTS.

APPLICATIONS 65
1. GRANTS TO LOCAL SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS 65
2. GRANTS TO HORSE ASSOCIATIONS ENGAGING STALLIONS . . 72
3. MEDALS in aid of Premiums given by Local Societies . . 76
4. SPECIAL GRANTS 78
5. GRANTS TO SCOTTISH WOMEN'S RURAL INSTITUTES . . 79

GROUP III.—COTTAGES AND GARDENS, &c.

1. PREMIUMS for BEST KEPT COTTAGES and GARDENS . . 82
2. MEDALS for BEST KEPT COTTAGES and GARDENS, GARDEN PRODUCE, POULTRY, and BEE-KEEPING . . . 83

GROUP IV.—PLOUGHING, HOEING, AND LONG SERVICE.

1. MEDALS FOR PLOUGHING COMPETITIONS 85
2. MEDALS FOR HOEING COMPETITIONS 86
3. CERTIFICATES AND MEDALS FOR LONG SERVICE . . . 87

GENERAL SHOW.

ANNUAL SHOW AT DUNDEE IN 1933—PRIZE LIST, REGULATIONS, &c. . 89

Address for communications:

JOHN STIRTON, Secretary,
8 Eglinton Crescent,
Edinburgh 12.

Telephone: 23655. *Telegraphic Address:* **"Society, Edinburgh."**

GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.
4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.
5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England and the British Dairy Farmers' Association.
6. The institution of an Examination in Forestry for First and Second Class Certificates.
7. The appointment of a Chemist for the purpose of promoting the application of science to agriculture.
8. The establishment of a Botanical Department.
9. The appointment of an Entomologist to advise members regarding insect pests.
10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
11. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members—Nine nominated by the Charter and Seven elected by the Society.

PRIVILEGES OF MEMBERSHIP

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered, and for Long Service Awards for Agricultural Employees.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*

   Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors,*

    &c., &c.

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follows:—

The determination of *one* ingredient in a single sample of manure or of a feeding-stuff	5s.
The determination of *two or more* ingredients in a single sample of manure or of a feeding-stuff	10s.

These charges apply only to analyses made for agricultural purposes for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed. The charges do not apply to Members whose Subscriptions are in arrears.

If the sample represents a substance bought under a guarantee, and if it is found to be notably deficient, the Society will communicate with the vendor and endeavour to obtain compensation for the buyer.

The Society's Chemist also supplies valuations of manures, according to the Society's scale of units, in cases in which the cash price asked by the seller accompanies the sample.

Chemist.—Mr J. F. TOCHER, D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

For further particulars, see under Chemical Department.

REPORTS ON THE ANIMAL ENEMIES OF CROP PLANTS AND LIVE STOCK (INCLUDING POULTRY)

The Consulting Entomologist is prepared to send to any Member of the Society a Report on damage or diseases of plants and animals due to animal agency (Insects, Mites, Worms, Snails, Slugs, Birds, and the Smaller Mammals). The charge for examination and report has been fixed at 1s.

Entomologist.—Mr R. STEWART MACDOUGALL, M.A., D.Sc., LL.D., Ivy Lodge, Gullane.

For further particulars, see under Entomological Department.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, reports on crop diseases, insect pests, &c., may be had on application to the Secretary.

MEMBERSHIP

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.

> *Candidates claiming to be on the Lower Rate of Subscription,* 10s., *must state under which of the above designations they are entitled to be placed.*

Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, a Member who shall not have objected to his election, on the same being intimated to him by the Secretary, cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. rate).

Patron of the Society—HIS MAJESTY THE KING.

OFFICERS AND DIRECTORS FOR 1932-1933.

President.

H.R.H. The Duke of York, K.G., K.T., &c.

Vice-Presidents.

The Duke of Atholl, K.T., G.C.V.O., C.B., D.S.O., M.V.O., Blair Castle, Blair Atholl.
The Earl of Strathmore, K.T., G.C.V.O., Glamis Castle, Glamis.
Sir John Gilmour, Bart., P.C., D.S.O., M.P., of Montrave, Leven.
William H. Buist, O.B.E., Lord Provost of the City of Dundee, City Chambers, Dundee.

Ordinary Directors.

Year of Election.	
1929	William Henderson of Lawton, Coupar-Angus (elected 1st June 1932).
	A. A. Hagart Speirs of Elderslie, Houston House, Houston.
	Major Robert W. Sharpe of The Park, Earlston.
	Thomas Elder of Stevenson, Haddington.
	John P. Sleigh of St John's Wells, Fyvie.
	T. Mercer Sharp, Bardrill, Blackford.
	James Wyllie, Tinwald Downs, Dumfries (elected 4th January 1933).
	James P. Brown, Dipple, Fochabers.
1930	James Kilpatrick, Craigie Mains, Kilmarnock.
	J. P. Ross-Taylor, Mungoswalls, Duns.
	Robert Miller, Ferrygate, North Berwick.
	Falconer L. Wallace of Candacraig, Strathdon.
	J. E. Kerr of Harviestoun, Dollar.
	Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
	Charley Tinker, Kilmartin, Inverness.
	John M. Roger, Balgove, St Andrews.
1931	Major S. Strang Steel of Philiphaugh, Selkirk.
	John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
	Alexander Forbes, Rettie, Banff.
	James M'Laren, Cornton, Bridge of Allan.
	John Hewetson, Baltersan, Newton-Stewart.
	Ian M. Campbell, Balblair, Invershin.
	Alexander Clark, Strathore House, Thornton, Fife.
	Captain John C. Stewart of Murdostoun, Newmains.
1932	Phipps O. Turnbull, Bowmont, Dunbar.
	James Durno, Crichie, Inverurie.
	T. G. Wilson, Carbeth Home Farm, Balfron Station.
	W. P. Gilmour, Balmangan, Kirkcudbright.
	Alexander Munro of Leanach, Culloden Moor, Inverness.
	Gavin Ralston, Glamis House, Glamis.
	George Buchanan, Hunterhill Farm, Paisley.
	Captain Thomas Elliot, Thirlestane, Lauder.

Extraordinary Directors.

Year of Election.	
1931	Andrew Pollock (A. & W. Pollock), Mauchline.
	William Meiklem, Bennochy Park, Kirkcaldy.
	The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
	Lord Rowallan, M.C., Rowallan, Kilmarnock.
	George Grant, Glenfarclas, Blacksboat.
	John W. Prentice, Craigrie Farm, Clackmannan.
1932	Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
	Robert Park, Brunstane, Portobello.
	James R. Lumsden of Arden, Dumbartonshire.
	Thomas Templeton, Sandyknowe, Kelso.

Show Division Directors.

1932	Alexander Batchelor, Craigie Home Farm, Dundee.
	J. Belfrage Black of Tillywhaly, Milnathort.
	…………
	F. W. Christie, Eden View, Cupar, Fife.
	Thomas Clark, Muirtons, Perth.
	Treasurer William Frain, The Birches, West Park Road, Dundee.
	William C. Hunter of Arngask, Glenfarg.
	…………
	William Tod of East Brackley, Kinross.
	Archibald Whyte, Spott, Kirriemuir.

Chief Officials.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, *Treasurer.*
Colonel F. J. Carruthers of Dormont, Lockerbie, *Honorary Secretary.*
John Stirton, *Secretary.*
J. G. Yardley, *Chief Clerk.*
John Watt, *Second Clerk.*
George James Gregor, C.A., 8 York Place, Edinburgh, *Auditor.*
J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist.*
Professor R. Stanfield, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield Gardens, Edinburgh, *Consulting Engineer.*
R. Stewart MacDougall, M.A., D.Sc., LL.D., Ivy Lodge, Gullane, *Consulting Entomologist.*
The Very Rev. Charles L. Warr, D.D., 63 Northumberland Street, Edinburgh, *Chaplain.*
Tods, Murray, & Jamieson, W.S., 66 Queen Street, Edinburgh, *Law Agents.*
William Blackwood & Sons Ltd., 45 George Street, Edinburgh, *Publishers.*
Hamilton & Inches, Princes Street, Edinburgh, *Silversmiths.*
Alexander Kirkwood & Son, 9 St James' Square, Edinburgh, *Medallists.*
John Reid, 55 Blenheim Place, Aberdeen, *Showyard Erector.*
J. P. Lauder, *Officer and Caretaker.*

Chairman of Board of Directors.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

Chairmen of Committee.

1. *Argyll Naval Fund*	Maclachlan of Maclachlan, Castle Lachlan, Strachur.
2. *Finance, Chambers, and Law*	Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.
3. *Publications*	Colonel F. J. Carruthers of Dormont, Lockerbie.
4. *Shows*	Archibald Whyte, Spott, Kirriemuir.
5. *Implements and Machinery*	Phipps O. Turnbull, Bowmont, Dunbar.
6. *Science*	Major Robert W. Sharpe of The Park, Earlston.
7. *General Purposes*	Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
8. *Education*	Colonel F. J. Carruthers of Dormont, Lockerbie.
9. *Forestry*	Sir Hugh Shaw-Stewart, Bart., C.B., Ardgowan, Inverkip.
10. *Office-Bearers*	Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

COMMITTEES FOR 1932-1933.

1. ARGYLL NAVAL FUND.

Maclachlan of Maclachlan, Castle Lachlan, Strachur, *Convener.*
The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.
Sir John Gilmour, Bart., P.C., D.S.O., M.P., of Montrave, Leven.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Sir Hugh Shaw-Stewart, Bart., C.B., Ardgowan, Inverkip.
Charley Tinker, Kilmartin, Inverness.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman, *ex officio.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

2. FINANCE, CHAMBERS, AND LAW.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *Convener.*
John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
James Durno, Crichie, Inverurie.
William C. Hunter of Arngask, Glenfarg.
J. E. Kerr of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
J. P. Ross-Taylor, Mungoswalls, Duns.
Phipps O. Turnbull, Bowmont, Dunbar.
Falconer L. Wallace of Candacraig, Strathdon.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*
George James Gregor, C.A., Auditor, *ex officio.*

3. PUBLICATIONS.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Honorary Secretary, *Convener.*
JAMES P. BROWN, Dipple, Fochabers.
JOHN E. B. COWPER, Gogar House, Corstorphine, Midlothian.
JAMES DURNO, Crichie, Inverurie.
ALEXANDER FORBES, Rettie, Banff.
GEORGE GRANT, Glenfarclas, Blacksboat.
WILLIAM C. HUNTER of Arngask, Glenfarg.
J. E. KERR of Harviestoun, Dollar.
JAMES KILPATRICK, Craigie Mains, Kilmarnock.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
JAMES M'LAREN, Cornton, Bridge of Allan.
ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
ALEXANDER MURDOCH, East Hallside, Cambuslang, Lanarkshire.
J. P. ROSS-TAYLOR, Mungoswalls, Duns.
The Hon. WALTER T. H. SCOTT, Master of Polwarth, Harden, Hawick.
FALCONER L. WALLACE of Candacraig, Strathdon.
T. G. WILSON, Carbeth Home Farm, Balfron Station.
Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*

4. SHOWS.

ARCHIBALD WHYTE, Spott, Kirriemuir, *Convener.*
JAMES KILPATRICK, Craigie Mains, Kilmarnock, *Vice-Convener.*
ALEXANDER BATCHELOR, Craigie Home Farm, Dundee.
J. BELFRAGE BLACK of Tillywhaly, Milnathort.
JAMES P. BROWN, Dipple, Fochabers.
GEORGE BUCHANAN, Hunterhill Farm, Paisley.
IAN M. CAMPBELL, Balblair, Invershin.
F. W. CHRISTIE, Eden View, Cupar, Fife.
ALEXANDER CLARK, Strathore House, Thornton, Fife.
THOMAS CLARK, Muirtons, Perth.
JOHN E. B. COWPER, Gogar House, Corstorphine, Midlothian.
JAMES DURNO, Crichie, Inverurie.
THOMAS ELDER of Stevenson, Haddington.
Captain THOMAS ELLIOT, Thirlestane, Lauder.
ALEXANDER FORBES, Rettie, Banff.
Treasurer WILLIAM FRAIN, The Birches, West Park Road, Dundee.
W. P. GILMOUR, Balmangan, Kirkcudbright.
GEORGE GRANT, Glenfarclas, Blacksboat.
WILLIAM HENDERSON of Lawton, Coupar-Angus.
JOHN HEWETSON, Baltersan, Newton-Stewart.
WILLIAM C. HUNTER of Arngask, Glenfarg.
J. E. KERR of Harviestoun, Dollar.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
JAMES M'LAREN, Cornton, Bridge of Allan.
ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
WILLIAM MEIKLEM, Bennochy Park, Kirkcaldy.
ROBERT MILLER, Ferrygate, North Berwick.
ALEXANDER MUNRO of Leanach, Culloden Moor, Inverness.
ALEXANDER MURDOCH, East Hallside, Cambuslang, Lanarkshire.
ROBERT PARK, Brunstane, Portobello.
ANDREW POLLOCK (A. & W. Pollock), Mauchline.
JOHN W. PRENTICE, Craigrie Farm, Clackmannan.
GAVIN RALSTON, Glamis House, Glamis.

John M. Roger, Balgove, St Andrews.
J. P. Ross-Taylor, Mungoswalls, Duns.
Lord Rowallan, M.C., Rowallan, Kilmarnock.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major S. Strang Steel of Philiphaugh, Selkirk.
Captain John C. Stewart of Murdostoun, Newmains.
Thomas Templeton, Sandyknowe, Kelso.
Charley Tinker, Kilmartin, Inverness.
William Tod of East Brackley, Kinross.
Phipps O. Turnbull, Bowmont, Dunbar.
Falconer L. Wallace of Candacraig, Strathdon.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
James Wyllie, Tinwald Downs, Dumfries.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.
Professor R. Stanfield, A.R.S.M., &c., 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

5. IMPLEMENTS AND MACHINERY.

Phipps O. Turnbull, Bowmont, Dunbar, *Convener*.
J. P. Ross-Taylor, Mungoswalls, Duns, *Vice-Convener*.
Alexander Batchelor, Craigie Home Farm, Dundee.
James P. Brown, Dipple, Fochabers.
Alexander Clark, Strathore House, Thornton, Fife.
John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
Thomas Elder of Stevenson, Haddington.
Alexander Forbes, Rettie, Banff.
W. P. Gilmour, Balmangan, Kirkcudbright.
William Henderson of Lawton, Coupar-Angus.
John Hewetson, Baltersan, Newton-Stewart.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
William Meiklem, Bennochy Park, Kirkcaldy.
Robert Miller, Ferrygate, North Berwick.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Robert Park, Brunstane, Portobello.
Andrew Pollock (A. & W. Pollock), Mauchline.
John W. Prentice, Craigrie Farm, Clackmannan.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
Charley Tinker, Kilmartin, Inverness.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
James Wyllie, Tinwald Downs, Dumfries.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman, *ex officio*.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.
Professor R. Stanfield, A.R.S.M., &c., 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

6. SCIENCE.

Major **Robert W. Sharpe** of The Park, Earlston, *Convener*.
Lord Rowallan, M.C., Rowallan, Kilmarnock, *Vice-Convener*.
Ian M. Campbell, Balblair, Invershin.
John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
James Durno, Crichie, Inverurie.
Alexander Forbes, Rettie, Banff.
W. P. **Gilmour**, Balmangan, Kirkcudbright.
William Henderson of Lawton, Coupar-Angus.
William C. Hunter of Arngask, Glenfarg.
J. E. **Kerr** of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
J. P. **Ross-Taylor**, Mungoswalls, Duns.
The Hon. **Walter T. H. Scott**, Master of Polwarth, Harden, Hawick.
A. A. **Hagart Speirs** of Elderslie, Houston House, Houston.
Major S. **Strang Steel** of Philiphaugh, Selkirk.
Captain **John C. Stewart** of Murdostoun, Newmains.
Thomas Templeton, Sandyknowe, Kelso.
Phipps O. Turnbull, Bowmont, Dunbar.
Falconer L. Wallace of Candacraig, Strathdon.
Archibald Whyte, Spott, Kirriemuir.
T. G. **Wilson**, Carbeth Home Farm, Balfron Station.
Sir **Ralph Anstruther** of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio*.
Colonel F. J. **Carruthers** of Dormont, Lockerbie, Honorary Secretary, *ex officio*.
J. F. **Tocher**, D.Sc., F.I.C., 41½ Union Street, Aberdeen, Chemist, *ex officio*.
R. **Stewart MacDougall**, M.A., D.Sc., LL.D., Ivy Lodge, Gullane, Entomologist, *ex officio*.

7. GENERAL PURPOSES.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman, *Convener*.
Alexander Clark, Strathore House, Thornton, Fife.
Thomas Clark, Muirtons, Perth.
John E. B. Cowper, Gogar House, Corstorphine, Midlothian.
Thomas Elder of Stevenson, Haddington.
Captain **Thomas Elliot**, Thirlestane, Lauder.
J. E. **Kerr** of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
William Meiklem, Bennochy Park, Kirkcaldy.
Robert Miller, Ferrygate, North Berwick.
Robert Park, Brunstane, Portobello.
The Hon. **Walter T. H. Scott**, Master of Polwarth, Harden, Hawick.
Major **Robert W. Sharpe** of The Park, Earlston.
Phipps O. Turnbull, Bowmont, Dunbar.
Sir **Ralph Anstruther** of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio*.
Colonel F. J. **Carruthers** of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

8. EDUCATION.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *Convener.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman.
John Stirton, Secretary, Highland and Agricultural Society of Scotland.

9. FORESTRY.

Sir Hugh Shaw-Stewart, Bart., C.B., Ardgowan, Inverkip, *Convener.*
The Duke of Atholl, K.T., G.C.V.O., C.B., D.S.O., M.V.O., Blair Castle, Blair Atholl.
Sir James Inglis Davidson, Saughton Mains, Corstorphine.
The Earl of Elgin and Kincardine, C.M.G., Broomhall, Dunfermline.
Walter Stewart Fothringham of Fothringham and Murthly, Murthly Castle, Perth.
Sir John Gilmour, Bart., P.C., D.S.O., M.P., of Montrave, Leven.
F. N. M. Gourlay, Kirkland, Tynron, Thornhill, Dumfriesshire.
The Earl of Home, K.T., Springhill, Coldstream.
J. H. Milne Home, Irvine House, Canonbie.
J. E. Kerr of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
A. D. Macdonald, Lennie Mains, Cramond Bridge.
Maclachlan of Maclachlan, Castle Lachlan, Strachur.
J. T. M'Laren, 7 Park Place, Stirling.
Sir Herbert E. Maxwell of Monreith, Bart., K.T., D.C.L., LL.D., F.R.S., Whauphill.
Lord Polwarth, Humbie House, Humbie, East Lothian.
Lord Scone, M.P., Scone Palace, Perth.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
A. A. Hagart Speirs of Elderslie, Houston House, Houston.
Major Mark Sprot of Riddell, Hawick.
The Earl of Stair, D.S.O., Lochinch, Castle-Kennedy.
Major S. Strang Steel of Philiphaugh, Selkirk.
Sir John Maxwell Stirling-Maxwell of Pollok, Bart., K.T., Pollok House, Pollokshaws.
Charley Tinker, Kilmartin, Inverness.
Falconer L. Wallace of Candacraig, Strathdon.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman, *ex officio.*
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio.*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio.*

10. OFFICE-BEARERS.

Constitution : (1) The four Ordinary Directors for the Division in which the Show for the year is to be held (with the exception of one retiring next year) ; (2) one Ordinary Director from each of the other Show Divisions ; and (3) the Chairman of the Board, Treasurer, and Hon. Secretary, *ex officiis.*

Glasgow .	James Kilpatrick, Craigie Mains, Kilmarnock. Captain John C. Stewart of Murdostoun, Newmains. George Buchanan, Hunterhill Farm, Paisley.
Borders .	J. P. Ross-Taylor, Mungoswalls, Duns.
Aberdeen .	James Durno, Crichie, Inverurie.
Stirling .	J. E. Kerr of Harviestoun, Dollar.

Dumfries . Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive.
Edinburgh . Robert Miller, Ferrygate, North Berwick.
Inverness . Ian M. Campbell, Balblair, Invershin.
Perth . Alexander Clark, Strathore House, Thornton, Fife.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire, Chairman, *ex officio*.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem, Treasurer, *ex officio*.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

REPRESENTATIVES ON OTHER BODIES.

National Agricultural Examination Board and National Dairy Examination Board.

Colonel F. J. Carruthers of Dormont, Lockerbie.
Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
John Stirton, *Secretary*, Highland and Agricultural Society of Scotland.

Edinburgh and East of Scotland College of Agriculture.

John Stirton, *Secretary*, Highland and Agricultural Society of Scotland.

West of Scotland Agricultural College.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

Aberdeen and North of Scotland College of Agriculture.

J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Dr Thomas G. Nasmyth, Canaan Lodge, 43 Canaan Lane, Edinburgh.

Glasgow Veterinary College.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

Scottish Milk Records Association.

W. P. Gilmour, Balmangan, Kirkcudbright.
Alexander Munro of Leanach, Culloden Moor, Inverness.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

National Trust for Scotland.

Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.

Association for the Preservation of Rural Scotland.

The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

SCOTTISH PLANT REGISTRATION STATION.

Standing Committee of Management.

James Elder, Athelstaneford Mains, Drem.
J. P. Ross-Taylor, Mungoswalls, Duns.
G. Bertram Shields, Rosebery Farm, Gorebridge.

Appointed for 5 years from 1st January 1931.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. In 1933 it will be held at Dundee, on the Thursday of the Show, at an hour to be announced in the Programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 16 provides—"That at General Meetings of the Society no motion or proposal (except of mere form of courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at 1.30 P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1934-1935, will be held at the places and on the days after-mentioned :—

DIVISION.		
1. *Edinburgh.*	Market Buildings, Gorgie, Edinburgh	Wed., 24th Jan. 1934, at 1.
2. *Glasgow.*	North British Station Hotel, Glasgow	Wed., 7th Feb. 1934, at 1.
3. *Stirling.*	Golden Lion Hotel, Stirling	Thur., 8th Feb. 1934, at 1.30.
4. *Perth.*	County Buildings, Cupar	Fri., 9th Feb. 1934, at 2.
	(The Meeting will be held in 1935 at Cupar ; in 1936 and 1937 at Perth.)	
5. *Borders.*	Railway Hotel, St Boswells	Thur., 15th Feb. 1934, at 2.
6. *Inverness.*	Station Hotel, Inverness	Tues., 20th Feb. 1934, at 2.
7. *Aberdeen.*	Imperial Hotel, Aberdeen	Fri., 23rd Feb. 1934, at 2.30.
8. *Dumfries.*	King's Arms Hotel, Dumfries	Wed., 7th Mar. 1934, at 2.15.

The nomination of a Proprietor or other Member paying the higher subscription must be made in the 3rd, 6th, 7th, and 8th Divisions ; and the nomination of a Tenant-Farmer or other Member paying the lower subscription in the 1st, 2nd, 4th, and 5th Divisions.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

GENERAL SHOW.

The Annual Show will be held at the Station Park, Dundee, on 20th, 21st, 22nd and 23rd June 1933. For closing dates for Entries, Premiums offered, &c., see 'Regulations and Prize List.'

EXAMINATIONS.

Agriculture. — The Examination in 1933 for the National Diploma in Agriculture will be held at the University, Leeds, on Wednesday, 19th April 1933, and following days. Applications close on 20th February 1933.

Dairying.—The Examination in 1933 (Scottish Centre) for the National Diploma in Dairying will be held at the Dairy School, Auchincruive, Ayr: *Written*—On Thursday, Friday and Saturday, 7th, 8th and 9th September 1933; *Oral and Practical*—On Monday, 18th September 1933, and following days. Applications close on 1st August.

Forestry.—The Examination for the Society's Certificates in Forestry will be held each year in the month of March at the Society's Chambers, 8 Eglinton Crescent, Edinburgh 12, provided a sufficient number of candidates present themselves for examination.

NATIONAL DIPLOMA IN AGRICULTURE

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a National Diploma in Agriculture (N.D.A.) This Examination is now conducted under the management of "The National Agricultural Examination Board" appointed by the two Societies.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a candidate must—

   (*a*) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany, Geology, General Chemistry, Physics, and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination; *or* (*b*) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University; *or*

(*c*) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has obtained a certificate in Subject 3 (*a*) Elementary Chemistry and Physics, (*b*) Botany of Group H of the Oxford Higher Local Examination, *or* in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination; *or*

(*d*) Present a Higher Leaving Certificate in Science (including Chemistry and Botany) of the Scottish Education Department.

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment. [Applications under this rule must be lodged *three months* before the date of the annual examination.]

6. *Before sitting for the* PRACTICAL AGRICULTURE *and* FARM MACHINERY AND IMPLEMENTS *papers, all candidates must produce evidence of possessing a practical knowledge of Agriculture obtained by residence on a farm for a period or periods (not more than two) covering a complete year of farming operations.*

7. Candidates will have the option of taking the whole of the following nine papers at one time, or of sitting for a group of any three, four, or five in the first year and the remaining subjects (at one examination) within the next two years:—

SUBJECT.	Maximum Marks.	PASS MARKS.
1. Practical Agriculture (First Paper)	400	240
2. Practical Agriculture (Second Paper)	400	240
3. Farm Machinery and Implements	300	150
4. Land Surveying and Farm Buildings	100	50
5. Agricultural Chemistry	200	100
6. Agricultural Botany	200	100
7. Agricultural Book-keeping	200	100
8. Agricultural Zoology	100	50
9. Veterinary Science and Hygiene	200	100
	2100	1130

NOTE.—Candidates taking the Examination in two groups of subjects are recommended to take Agricultural Chemistry and Agricultural Botany in the first group.

8. A candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (600) of the maximum marks (800) in the two Practical Agriculture papers.

9. Candidates electing to take the entire Examination at one time and failing in not more than three subjects may appear for these subjects in the following year. Failure in more than three subjects will be regarded as failure in the whole Examination.

10. In the case of candidates electing to take the Examination in two groups—

(*a*) A candidate appearing for a group of *three* subjects and failing in a single subject may, *in the case of a first group*, appear for that subject along with the second group, or, *in the case of a second group*, in the following year. Failure in more than one subject will be regarded as failure in the group.

(*b*) A candidate appearing for a group of *four* or more subjects and failing in not more than two subjects may, *in the case of a first group*, appear for these subjects along with the second group, or, *in the case of a second group*, in the following year. Failure in more than two subjects will be regarded as failure in the group.

11. Non-returnable fees must be paid by candidates as follows:—

Entire Examination . . .	Six guineas.
Group of Subjects . . .	Three guineas.
Reappearance for any Subjects .	10/6 per Subject.

12. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

The Examination will take place at Leeds University on WEDNESDAY, 19th APRIL 1933, and following days.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," or from "The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12," and must be returned duly filled up not later than MONDAY, 20th FEBRUARY 1933, when the Entries will close.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

1.—FIRST PAPER.

1. *British Farming.*—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate.*—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils.*—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures.*—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops.*—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, sugar beet, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming—Management of Orchards.

2.—Second Paper.

6. *Live Stock.*—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs, and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crops, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Farm valuations—Rent and taxes.

10. *Labour.*—Organisation of labour—piece-work, time-work—labour costings.

11. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm work and management.*

3.—FARM MACHINERY AND IMPLEMENTS.

1. *Power.*—The principle of action, construction, method of working, also care and management of steam engines and boilers, gas, oil and petrol engines and agricultural tractors—Cost and working expenses in connection with the above—Estimation of the brake horse-power of engines—Power derived from water—Measure-

ment of the quantity of water flowing in a stream—General arrangement of water-power plants—Water-wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes—Hydraulic ram—Windmills.

2. *Agricultural Implements and Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Arrangement of machinery with respect to the power plant—Pulleys and belting—Shafting and bearings—Lubrication—Lifting appliances—Strength and care of chains—Concrete and its use in the construction of simple foundations for engines and machines.

3. *Implements of Cultivation.*—Ploughs—Cultivators—Grubbers—Harrows—Drills—Manure Distributors—Seeding and planting implements.

4. *Implements of Harvesting.*—Mowing and Reaping machines—Rakes—Tedders—Elevators—Potato raisers.

5. *Implements of Transit.*—Carts, waggons, rick lifters, tractors.

6. *Threshing and Food-preparing Machinery.*—Threshing machines, stationary and portable—Screen Winnowers—Hummelers, Chaff cutters—Pulpers—Cake breakers.

7. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—*Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.*

4.—LAND SURVEYING AND FARM BUILDINGS.

1. The use and adjustment of instruments employed in Surveying and Levelling other than the Theodolite.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler "field problems."

3. Levelling and plotting from field book.

4. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

5. *Roads and Fences.*—The construction and maintenance of farm roads, fences, and ditches.

6. *Land Drainage.*—Methods of draining; mole and pipe drains; cost of construction and maintenance.

7. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cowsheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure.

N.B.—*Each candidate should have with him at the Examination a pair of compasses, scales of equal parts, including scales of one chain to the inch,* 4 *feet to the inch,* 8 *feet to the inch, and the scale fitting the Ordnance map,* $\frac{1}{2500}$ *or* 25·344 *inches to the mile, a small protractor, a set square, and a straight-edge about* 18 *inches in length.*

5.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief food constituents—Energy values—Vitamines—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

6.—AGRICULTURAL BOTANY.

In addition to a *general knowledge* of the morphology, histology, and physiology of plants, candidates will be expected to possess a *detailed knowledge* of the following subjects:—

The classification of plants of importance in agriculture as shown by a detailed study of the genera, species, and botanical varieties of the British Crop Plants and Weeds included in the following families:—

Ranunculaceæ.
Cruciferæ.
Caryophyllaceæ.
Leguminosæ.
Rosaceæ.
Umbelliferæ.
Compositæ.
Solanaceæ.
Scropulariaceæ.
Labiatæ.
Chenopodiaceæ.
Polygonaceæ.
Liliaceæ.
Gramineæ.

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Identification of materials used in feeding cakes and meals.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the effects of parasitic fungi. Resistance to disease: conditions affecting. Fungoid diseases scheduled from time to time by the Ministry of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology: nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

7.—AGRICULTURAL BOOK-KEEPING.

1. Advantages of book-keeping to the farmer. Difficulties and how they can be overcome. Objects of book-keeping.
2. General principles of book-keeping. Double-entry system. Description and use of various books. Ledger, journal, cash-book, petty cash-book, day-books, &c. Entering transactions; posting; trial balance; closing the accounts. Single-entry system.
3. Special ledger accounts: Interest, depreciation, rent and rates, improvements, private and household expenses, profit and loss and capital; partnership accounts.
4. Bank business. Opening a bank account. Use of cheques. Deposits and overdrafts.
5. General office work; correspondence, order notes, invoices, rendering accounts, receipts, &c. Filing systems.
6. Farm valuations for book-keeping purposes. Dates for stock-taking and principles of valuation. The farm balance-sheet.
7. Systems of farm book-keeping. Conditions that determine the most suitable system. Advantages and drawbacks of each system.
8. Accounts for the owner-occupier. Treatment of rent. Incidence of rates and tithe in England and Scotland, and their treatment as between farm and estate accounts. Improvements and upkeep and the general principles relating to maintenance claims.
9. Cost accounting. General principles and methods. Advantages, objects, difficulties.

10. Interpretation of results from ordinary and from cost accounts. Precautions necessary. Use of accounts as a guide to efficient management.

11. Income Tax. How the farmer is assessed. Preparation of Income Tax return. Treatment of Income Tax in accounts.

8.—AGRICULTURAL ZOOLOGY.

The Examination is designed to test practical knowledge, and therefore Candidates will be expected to recognise the animals of agricultural importance referred to in the Syllabus.

GENERAL.

A general knowledge of the characteristics of living animals and how they differ from plants.

One-celled animals, *e.g.*, Amoeba, and many-celled animals.

General outline of the classification of animals and the characters on which it is based.

Organic Evolution. Theories of Heredity.

SPECIAL.

I. *Invertebrates.*—A. The Worm Parasites of Stock. Flat and Round Worms. Structure and Life History, for example, of Liver-fluke, Tapeworm, Ascaris. The mode of life and life history of the chief worm enemies of the domesticated animals. Preventive and remedial measures.

B. The Arachnid enemies of Stock: Mange or Scab Mites, Demodex Mites, Ticks. External structure and life history. Control measures.

C. The Insect enemies of Stock: (*a*) External parasites, *e.g.*, gadflies, warble flies, blue-bottles, green-bottles, stable fly, ked, lice. (*b*) Internal parasites, *e.g.*, bot and warble flies.

D. Insects injurious to Crops: Structure and classification of insects. Mode of life and life history of the chief insect pests of agricultural crops.* Control, preventive and remedial measures—natural control; artificial control (Insecticides).

---

* *The chief pests are detailed in Pamphlets issued by the Ministry of Agriculture and Fisheries.*

E. Other invertebrates of agricultural importance, *e.g.*, earthworms, eelworms, slugs and snails, centipedes and millepedes, gall mites.

II. *Vertebrates.*—Birds: the commoner birds of farm importance, their recognition and an estimate of their work.

Mammals: Outstanding characters for recognition, and the economic importance of:—

1. Ungulata or Hoofed Mammals, *e.g.*, horse, pig, cattle, sheep, deer.
2. Rodentia or Gnawing Mammals, *e.g.*, hares, rabbits, rats, mice, voles, squirrels.
3. Insectivora, *e.g.*, mole, hedgehog, shrew.
4. Carnivora, *e.g.*, dog, fox, polecat, stoat, weasel, badger.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

9.—VETERINARY SCIENCE AND HYGIENE.

1. Elementary anatomy and physiology of the horse, ox, sheep, and pig, and their relation to unsoundness and disease.
2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.
3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.
4. The management of farm stock in health and disease.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

WINNERS OF DIPLOMA IN 1932.

Diploma with Honours.

1st, **John Heywood Cock**, Seale-Hayne Agricultural College, Newton Abbot, Devon.
2nd, **George Bartram**, Midland Agricultural College, Sutton Bonington, Loughborough.
3rd, **John Drummond Tallantire**, University of Leeds.

Diploma.

Arthur Fairhurst Blackburn, University of Leeds.
William Carr, Armstrong College, Newcastle-upon-Tyne.
John Carrick, West of Scotland Agricultural College, Glasgow.
William Chambers, West of Scotland Agricultural College.
William Joseph Thompson Curtis, Midland Agricultural College.
Geoffrey Ronald Barr Dawson, University of Leeds.
William Ellison, Armstrong College.
William John England, University of Reading.
James William Fell, Armstrong College.
Francis Gerard Gillett, Harper Adams Agricultural College, Newport, Shropshire.
Christopher Francis Hodson Goode, Seale-Hayne Agricultural College.
George Alfred Greaves, University of Reading.
George Henry Hughes, Seale-Hayne Agricultural College.
Malcolm Julius Kinsey, South-Eastern Agricultural College, Wye, Kent.
Thomas Wyndham Lewis, Armstrong College.
Donald Austin M'Kenzie, Glasgow University and West of Scotland Agricultural College.
Margaret Anna Pairman Miller, Edinburgh and East of Scotland College of Agriculture.
William Mitchell, Jun., West of Scotland Agricultural College.

Alfred Herbert Moore, South-Eastern Agricultural College.
Lewis Trevor Morris, Armstrong College.
Cyril George Mortimer, University of Leeds.
Stewart Norton Parkin, Seale-Hayne Agricultural College.
Kenneth Maxwell Pearman, Armstrong College.
Geoffrey William Pope, Midland Agricultural College.
George Bartlett Read, University of Reading.
Robert Renfrew, West of Scotland Agricultural College.
Cynfab Roberts, University College, Bangor.
Cyril Rowe, University of Reading.
Michael Owen Rowlands, University College, Bangor.
John Clifford Saville, Midland Agricultural College.
Robert Henry Sharp, South-Eastern Agricultural College.
Frank Skinner, Seale-Hayne Agricultural College.
Frank Harvey Stanley Stephenson, Midland Agricultural College.
Philip Lace Teare, West of Scotland Agricultural College.
John Thacker, Harper Adams Agricultural College.
Francis Tizzard, Seale-Hayne Agricultural College.
Anthony Thomas George Trew, University of Reading.
Edward Charles Trotter, South-Eastern Agricultural College.
Thomas Cox Waterman, Seale-Hayne Agricultural College.
Wesley Weightman, Armstrong College.

Examination Papers of Past Years.

Copies of papers set at past Examinations in Agriculture, so far as available, may be had on application. Price 6d. per set.

(N.D.A. Papers available are those for the years 1923-1925 and 1929-1932.)

NATIONAL DIPLOMA IN DAIRYING

This Examination, instituted in 1897, is conducted by "The National Dairy Examination Board," appointed jointly by the Royal Agricultural Society of England, the Highland and Agricultural Society of Scotland, and the British Dairy Farmers' Association.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

1. The Societies may hold annually in England and in Scotland, under the management of the National Dairy Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters 'N.D.D.'

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. Forms of Entry for the Examination in England may be obtained from 'The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.1,' and must be returned to him duly filled up, with the entry fee, on or before Thursday, July 20th, 1933.

4. Forms of Entry for the Examination in Scotland may be obtained from 'The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12,' and must be returned to him duly filled up, with the entry fee, on or before Tuesday, August 1st, 1933.

5. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa. An exception may be made in favour of a candidate reappearing under Regulation* 11 (3) *provided special application is made at the time of entry.*

6. As a preliminary to the acceptance of any application for permission to enter for the Examination, a candidate must produce :—

(1) A certificate testifying that he or she has attended a Diploma Course in the subjects of the Examination covering *two academic years* at an approved Dairy Training Institution and has satisfied the authorities of the Institution of his or her fitness for admission to the Examination. This period shall include six session months' instruction (consisting of not more than two periods) in practical dairy work.

(2) Evidence that he or she has spent at least six months on an approved Dairy farm and taken part in the work. This period must not run concurrently with the six months' practical training referred to in subsection 1.

A Dairy Farm to be approved must have not fewer than fifteen cows kept in daily milking.

7. A candidate who has already taken a Degree in Agriculture of a British University or a Diploma in Agriculture recognised by the National Dairy Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's training at an approved Dairy Training Institution, providing that such course includes at least six months' training in practical dairy work, and that he or she has worked for at least six months on an approved Dairy Farm.

8. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has :—

(1) A general knowledge of the Management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) A general knowledge of Dairy Factory Management, Dairy Hygiene, Dairy Engineering, and Dairy Book-keeping.

(4) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheese-making having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE : Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE : Cheddar, Dunlop, or Cheshire.

9. Candidates will have the option of:—
(*a*) Taking the whole Examination at one time; or
(*b*) Taking the Examination in two parts.

A candidate taking the Examination in two parts must take the following subjects at the first sitting: Dairy Farming, Dairy Hygiene, Principles of Dairying, Dairy Factory Management and Dairy Engineering, Practical Cheesemaking and Buttermaking; the remaining three Papers, Chemistry and Physics, Dairy Bacteriology, and Dairy Book-keeping, to be taken at the Examination in the following year.

10. The maximum marks obtainable, and the marks required for a pass in each subject are as follows:—

	Max.	Pass
Written Examination—		
Dairy Farming	150	90
Dairy Hygiene	100	60
Dairying—		
(*a*) Principles of Dairying	150	90
(*b*) Dairy Factory Management and Dairy Engineering	100	50
Chemistry—		
(*a*) General Chemistry and Physics.	100	60
(*b*) Dairy Chemistry.		
Dairy Bacteriology	100	60
Dairy Book-keeping	100	50
Practical Examination—		
Hard-pressed Cheese-making	200	150
Blue-veined Cheese-making	100	75
Soft Cheese-making	100	75
Butter-making	200	150
	1400	910

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1120) of the maximum marks (1400) in the Examination, provided that they also obtain at least 80 per cent (400) of the maximum marks (500) in the Dairy Farming, Hygiene, and Dairying papers.

11. A candidate taking the whole Examination at one time:—
(1) who fails in any part of the practical examination shall fail in the whole examination.
(2) who fails in four or more subjects of the written examination shall fail in the whole examination.
(3) who, having passed in the practical examination, fails in not more than three subjects of the written examination may, at the discretion of the Board, appear for those subjects in the following year.

12. A candidate taking the Examination in two parts, and failing in a *single subject* in the first part of the Examination, may, at the discretion of the Board, appear for that subject along with the second part; or, in the case of a *single subject* of the second part, in the following year. Failure in more than one subject will be regarded as failure in that part of the Examination, Failure in any part of the Practical Examination will entail complete failure.

13. The entrance fees will be as follow:—

For the whole Examination taken at one time	£3	3	0
For the Examination taken in two parts:			
First part	3	3	0
Second part	1	1	0

For reappearance, 10s. 6d. each subject.

14. The Board reserve the right to postpone, to abandon, or in any way or at any time to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS.

ENGLAND.—Thursday, 7th September 1933, and following days, at the University and British Dairy Institute, Reading. Last date for receiving applications, Thursday, July 20th.

SCOTLAND.—At Dairy School, Auchincruive, Ayr. WRITTEN—Thursday, Friday, and Saturday, 7th, 8th, and 9th September 1933. ORAL AND PRACTICAL—Monday, September 18th, and following days. Last date for receiving applications, Tuesday, August 1st.

SYLLABUS OF SUBJECTS OF EXAMINATION.

I.—DAIRY FARMING AND DAIRY HYGIENE.

(*a*) Dairy Farming.

Soils and Crops.—Types of Soils suitable for dairying. Rotations and systems of cropping. Cultivation, manuring and management of grain, root and forage crops used in dairying. Silage. Temporary and permanent pastures, haymaking.

Plant Physiology.—Roots, shoots, flowers, fruit and seeds of agricultural plants.

Dairy Cattle.—Characteristics of different breeds. Relation of conformation and appearance to Milk Yield. Choice of dairy cattle in relation to climate and soil. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter and cheese production.

The management of a Dairy Herd. Cattle breeding and grading up of dairy stock. Calf rearing and management of young stock.

Milk Recording. Systems, and utilisation of results. Details of official schemes.

Foods and Feeding.—Summer and winter feeding of dairy cattle and young stock. Fodder crops and green forage. Roots. Ensilage. Concentrated foods, meals, cakes. Preparation of food. The effect of food on milk and its products.

Pig Keeping.—Characteristics of the more important breeds. The breeding, rearing and fattening of pigs. Production of pork and bacon.

Farm Management.—Systems of dairy farming. The selection, stocking and equipment of typical farms. Organisation of the farm and disposal of produce.

Dairy Economics.—The Dairy Industry of Great Britain and its relationship to Agriculture. The relative importance of the various products. The retail milk trade. Markets, Dairy organisation and co-operation. Modern developments in the Dairy industry. Sources of imported Dairy Produce.

(*b*) DAIRY HYGIENE.

Animal Physiology.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

Veterinary Science.—The more important diseases of dairy cattle and their treatment. The transmission and eradication of disease.

Milk Hygiene.—Sanitary conditions. Suitability of water supply. Methods of milking and handling of milk. Regulations affecting milk production. Milk in relation to Public Health.

Farm Buildings.—Situation, chief dimensions and construction of cow houses and dairy buildings. Housing for young stock and pigs. Air space and ventilation, drainage and water supply.

II.—DAIRYING.

(*a*) PRINCIPLES OF DAIRYING.

Milk.—Milking by hand and machinery. Importance of cleanliness. Cooling of milk. Prevention of contamination. Pasteurisation. Sterilisation. Keeping of milk. Milk testing and sampling. Use of Gerber and Babcock Testers. Interpretation of results. Legal standards. Legislation affecting milk production.

Cream.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening, and preparation and uses of starters. Preparation of cream for sale. Uses of preservatives. Clotted cream.

Butter.—Churns and butter-making appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

CHEESE.—Principles of manufacture. Appliances for cheese-making. The making of the principal varieties of British, Colonial and Continental cheese from cream, whole milk and skim milk. Acidity of milk. Common tests for acidity. Uses of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

(*b*) DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING.

FACTORY PRACTICE.—Milk depots and handling of factory milk. Systems of cooling and refrigeration. Pasteurisation. Factory butter and cheese-making. Milk Powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depots, butter, cheese and dairy factories.

FACTORY MANAGEMENT.—Factory routine. Organisation of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

DAIRY APPLIANCES AND MACHINERY.—Appliances used in the production and handling of milk, butter and cheese. Care and management of engines and boilers, dairy factory machinery, refrigerating machinery.

BUILDINGS.—Situation, construction and drainage of creameries, milk depots and dairy factories.

III.—CHEMISTRY.

(*a*) GENERAL CHEMISTRY AND PHYSICS.

CHEMISTRY.—Elements, compounds and mixtures. Chemical symbols, formulæ and equations. Acids, bases, salts: their distinctive properties. Acidity and alkalinity; their quantitive estimation. The Atmosphere: its constituents and impurities; influence on dairying operations. Water: its constitution; pure and natural waters; impurities in water and whence derived. Importance of a good water supply in dairying. General knowledge of elementary chemistry. Oxygen; hydrogen; carbon; nitrogen; phosphorus and sulphur; common metals; common acids; compounds of potassium, sodium, ammonium, calcium.

Elementary organic chemistry; sugar, milk sugar, starch, alcohol, acetic acid, formaldehyde, butyric acid, lactic acid, glycerine, saponification of fats; albumen, casein, pepsin.

PHYSICS.—The different forms of matter; solid, liquid, gaseous. Specific gravity and instruments for determining it. Temperature and methods of measuring it. Expansion; thermometric scales. Influence of temperature in dairy operations. Atmospheric pressure and its measurement. Hygrometry. Heat and its measurement; specific heat. Latent heat. Conduction. Convection. Radiation. Solution. Filtration. Distillation. Simple machines, such as levers, pulleys and light weighing machines.

(*b*) DAIRY CHEMISTRY.

CHEMISTRY OF MILK.—The nature, composition, properties and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and uses.

MILK PRODUCTS.—Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

DAIRY ANALYSIS.—Analytical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of milk, butter and cheese. Adulteration of milk, cream, butter and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

CHEMISTRY OF FEEDING.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

N.B.—*Candidates are required to bring to the Oral Examination their Laboratory notebooks in sections* (a) *and* (b) *of this subject certified by their teachers as being the record of their Laboratory work carried out during the course.*

IV.—DAIRY BACTERIOLOGY.

GENERAL BACTERIOLOGY.—Bacteria; their form, classification, growth and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilisation, pasteurisation, disinfectants and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

BACTERIOLOGY OF MILK.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discoloration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

MILK PRODUCTS.—The bacteria concerned in the ripening of cream and butter-making. 'Starters,' their preparation and management. The ripening of hard, soft and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

DAIRY MYCOLOGY.—Moulds and yeasts in dairy practice. Their form, classification, growth and relation to dairy products.

N.B.—*Candidates are required to bring to the Oral Examination in this subject their Laboratory notebooks certified by their teachers as being the record of their Laboratory work carried out during the course.*

V.—DAIRY BOOK-KEEPING.

Reasons for keeping accounts on the farm and in the dairy factory.

General principles of double-entry book-keeping. Use of day-book, journal, ledger, cash-book, analysis cash-book, and petty-cash book. Preparation of profit and loss account, capital account and balance sheet. Adjustments necessary for the owner-occupier.

Valuations. Basis of valuations for accounting purposes on the farm and in the dairy factory. Dates for stocktaking.

Methods of accounting suitable for dairy farms and factories. Forms for milk-retailing, cheese-making, and butter-making.

Preparation of a cost account for milk production.

Interpretation and use of accounting results, with special reference to their practical application.

Opening a Bank account. Cheques, deposits, and overdrafts.

Assessment of the Farmer for Income Tax purposes.

VI.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce before the Examination a satisfactory certificate of proficiency in the milking of cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (1) Hard-pressed, of not less than 30 lb. (see Note to Reg. 8 (4)); (2) Veined or blue-moulded, of not less than 10 lb.; and (3) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Evêque.

WINNERS OF DIPLOMA IN 1932.

SCOTTISH CENTRE.

Diploma.

FLORENCE ESTHER CORKILL, Ballamenagh Farm, Baldrine, Isle of Man.

HENRY HIRST, Heatherdene, Newby, Scarborough.

ALEXANDER ROBERT AINSLIE HOURSTON, Ploverhall, Evie, Kirkwall, Orkney.

AGNES SCOTT M'INTYRE, Badyen Farm, Cardross, Dumbartonshire.

DONALD AUSTIN M'KENZIE, 42 Wellshot Drive, Cambuslang, Glasgow.

MARGARET ANNA PAIRMAN MILLER, 13 St Catherine's Place, Edinburgh.

CATHERINE MITCHELL, Bleaton, Blairgowrie.

JANET HENDERSON MITCHELL, Castleton, Fordoun, Kincardineshire.

CYRIL GEORGE MORTIMER, Daffil Cottages, Churwell, Leeds.

ELIZABETH M. MURCHIE, Shannachie House, by Whiting Bay, Arran.

Marjory Wilson Ord, 2 Mayberry Grove, Linthorpe, Middlesbrough, Yorks.
Stewart Norton Parkin, 5 Belmont Road, St Peter Port, Guernsey.
James Steel Paterson, Hayhill Farm, Gartcosh, Lanarkshire.
Catherine Stewart Rattray, Drummonie, Dalginross, Comrie, Perthshire.
Robert Renfrew, Blackstoun Cottage, Paisley.
Mary Anderson Scott, 38 Carden Place, Aberdeen.
Robert Barr Sillar, Low Todhill, Kilmarnock.
Eva Shennan Smith, Wyllieland, Fenwick, Ayrshire.
Kathleen Margaret Lindsay Spence, Commieston, Montrose.
John Weir, Fairview House, Hollandbush, Hamilton.
Mildred Mary Wright, Greenbank, Temple Sowerby, Penrith.

English Centre.

Diploma.

Gladys Ellen Audrey, The University and British Dairy Institute, Reading.
Lily Amy Ellen Baker, The University and British Dairy Institute, Reading.
Hylda Augusta Burr, The University and British Dairy Institute, Reading.
Walter Charles Nickerson Churchyard, University College, Aberystwyth.
John Heywood Cock, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Elizabeth Eleanor Myfanwy Davies, University College, Aberystwyth.
Harriet Edwards, University College, Aberystwyth.
Evelyn Nona Ellis, Studley College, Warwickshire.
William John England, The University and British Dairy Institute, Reading.
Annie Mary Evans, The University and British Dairy Institute, Reading.
Olivia Gatheral, Studley College, Warwickshire.
Elizabeth Heyes Hesketh, Lancashire County Council Dairy School, Hutton, Preston.
E. Kathleen Holding, Midland Agricultural College, Sutton Bonington, Loughborough.
Samuel Leonard Huthnance, The University and British Dairy Institute, Reading.
Nancy Hutton, Lancashire County Council Dairy School, Hutton, Preston.
Joyce Emily Jeffery, Midland Agricultural College, Sutton Bonington, Loughborough.
Catherine Enidwen Jones, University College, Aberystwyth.
Jennie Ruth Jones, University College, Aberystwyth.
Margaret Hilda Jones, The University and British Dairy Institute, Reading.
Arthur Wilson Launder, The University and British Dairy Institute, Reading.

Anne Rosamund Julia Medley, The University and British Dairy Institute, Reading.
Elizabeth Margaret Parker, East Anglian Institute of Agriculture, Chelmsford.
Margaret Joan Ping, The University and British Dairy Institute, Reading.
Donald Edwin Ralph, University College, Aberystwyth.
George Bartlett Read, The University and British Dairy Institure, Reading.
Janet Muriel Ritchie, Studley College, Warwickshire.
Edward Frank Roberts, The University and British Dairy Institute, Reading.
William Park Strang, The University and British Dairy Institute, Reading.
Maud Weighell, Lancashire County Council Dairy School, Hutton, Preston.
Arthur John Whitlock, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Winifred Mary Wildsmith, Midland Agricultural College, Sutton Bonington, Loughborough.

EXAMINATION PAPERS OF PAST YEARS.

Copies of papers set at past Examinations in Dairying, so far as available, may be had on application. Price 6d. per set.

CERTIFICATES IN FORESTRY

The Society grants First and Second-Class Certificates in Forestry.

1. An Examination will be held each year about the month of March.

2. The Examination in 1933 will be held at 8 Eglinton Crescent, Edinburgh, on the 7th, 8th, and 9th March, provided a sufficient number of candidates present themselves for examination.

Forms of application may be obtained from the Secretary, The Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12, and must be returned duly completed on or before 15th February 1933.

3. Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (*a*) The Elements of Forest Botany and Forest Zoology; (*b*) The Elements of Meteorology and Geology; (*c*) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (*d*) Arithmetic and Book-keeping.

4. The Examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.

5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.

6. A candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no candidate will be eligible to enter for more than two subsequent Examinations.

7. A candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

8. Candidates who obtain the First-Class Certificate in Forestry will be elected Free Life Members of The Highland and Agricultural Society of Scotland.

9. The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates :—

Eric Arthur Nobbs, Department of Agriculture, Cape Town, ...	1899
George Potts, Grey College, Bloemfontein, Orange River Colony, ...	1899
Duncan S. Rabagliati, 1 St Paul's Road, Bradford,	1901
Frank Scott, Dumfries House Mains, Cumnock, .	1903
William T. Stockley, Rose Villa, Garswood, near Wigan, ...	1906
A. Frank Wilson, C.D.A. (Edin.), Reedieleys, Auchtermuchty, ...	1907
George Fisher, Farm Brook, Pilling, Garstang, Lancs., ...	1909
John Patten, jun., Hulne Park, Alnwick, . .	1909
Alexander Mitchell, Dalmeny Park, Edinburgh,	1909
John D. Davidson, Brimstage, Birkenhead, . .	1911
Donald Doull, M.A., A.R.C.Sc., High School, Kelso,	1911
James W. Mackay, Jervaulx Abbey, Middleham, Yorks., ...	1915
Harry Watson, Darnaway, Forres, . . .	1915
Reginald Watt Hunter, 94 St George's Terrace, Newcastle-on-Tyne, ...	1919
John M'Ewen, Monaughty Forest, by Elgin . .	1922
Alfred Pope, Swinsty Hall, Fewston, Harrogate .	1922
William Lyne Watt, Department of Agriculture, P.O. Box 323, Nairobi, Kenya Colony, Africa, .	1926
Robert Lindsay, Royal Botanic Garden, Edinburgh,	1930
George Jamieson Thomson, Coatesgate, Auchen Castle, Moffat, ...	1930

The following have since obtained Second-Class Certificates :—

William Bruce, B.Sc., East of Scotland College of Agriculture, Edinburgh, ...	1901
Rajappier Swaminathan, 56 Jesus Lane, Cambridge,	1901
Thomas Usher, Courthill, Hawick, . . .	1901
Allan Carruth, Lawmarnock, Kilbarchan, . .	1905
Alex. M. Lumsden, Newburn Schoolhouse, Upper Largo, ...	1905
Robert M. Wilson, Laws Cottage, Duns, . .	1905
Thomas Campbell, Greystoke, Penrith, . .	1906
Donald Ferguson, Quarry Lane, Lennoxtown, .	1906
Charles Penrhyn Ackers, Huntly Manor, Gloucester, ...	1908
Robert Howie, Beechwood, Arbroath, . . .	1908
John Trotter, D.Sc., 22 West Savile Terrace, Edinburgh, ...	1908
James A. S. Watson, Downieken, Dundee, . .	1908
Norman H. Pearson, 52 Percy Park, Tynemouth, .	1909
Lionel F. Stobart, Royal Agricultural College, Cirencester, ...	1911
Alexander George Norrie, Cairnhill, by Turriff,	1913
William Watt, Darnaway, Forres, . . .	1913
William P. Greenfield, 6 Littlefield Lane, Grimsby,	1915
William M'Ghee, Craigbrae, Straiton, Maybole, .	1932

SYLLABUS OF SUBJECTS OF EXAMINATION

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. The tree: conditions essential for its nutrition and growth. 2. The soil: its physical structure and properties. 3. The different forms of woodland crops. 4. Pure woods and mixed woods. 5. Even-aged and uneven-aged woods. 6. Sylvicultural characteristics of the principal trees, broad-leaved and coniferous, including recently introduced species of sylvicultural value.

II. *Forest Organisation.*—7. General ideas regarding the necessity for a national forest policy. 8. Conditions necessary for the formulation of a regulated system of forest management. 9. Working plans, their compilation, construction, and use.

III. *Practical Management of Forests.*—10. Assessment of the suitability of areas for afforestation purposes. 11. Preparation of areas for planting. 12. Treatment of heather, bracken, scrub. 13. Draining and enclosing. 14. Choice of species for various situations. 15. Seed—harvesting, extraction, storage. 16. Nurseries, temporary and permanent—choice of site, internal lay-out, management, including lifting, packing, and transport of plants. 17. Planting and sowing in the forest—methods suited to various conditions. 18. Natural regeneration by seed. 19. Regeneration by cuttings, layers, stool shoots. 20. Formation of mixed woods, even-aged, uneven-aged, temporary and permanent, use of nurse trees, kinds of nurse trees suitable under different conditions. 21. Tending of young woods. 22. Pruning. 23. Thinning.

IV. *Forest Protection against*—24. Fires, wind, snow, deer, rabbits, squirrels, birds, insects, and fungi.

V. *Timber.*—25. Its technical properties. 26. Its defects. 27. Recognition of different kinds of timber. 28. Processes for increasing its durability.

VI. *Utilisation of Produce.*—29. Uses of wood and other produce. 30. Felling. 31. Conversion. 32. Seasoning. 33. Transport. 34. Measurement, classification, valuation, and marketing of standing timber.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) FOREST BOTANY.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(*b*) FOREST ZOOLOGY.

General classification of animals. The differences between Vertebrates and Invertebrates.

Earthworms and their relation to soil formation; life-history and habits.

Snails and Slugs : General characters and habits.

Insects : Structure and metamorphosis. General classification; the orders of insects important in forestry. Habits and life-histories of important insects in the following groups: leaf-eaters, bark and stem borers, root feeders, sucking insects, predaceous and parasitic insects.

Insect Control : Natural control; preventive and remedial measures.

Spiders and Mites : General characters and habits.

Birds : Recognition and relation to forestry of crows, jay, woodpecker, hawks, owls and tits, also game birds.

Mammals : General characters of the main groups represented by the deer, rabbit, hedgehog, and weasel; the relation of these to forestry.

III.—METEOROLOGY AND GEOLOGY.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. Gases injurious to vegetation.

Geology.

The crust of the earth, its structure and denudation. Recognition of igneous, sedimentary, and metamorphic rocks. Weathering of rocks and soils; formation of alluvium, gravels, and glacial deposits. The composition, mode of weathering, and distribution of the various geological formations in the British Isles. The relationship of strata to the configuration of a country and to the overlying soils, rainfall, and drainage.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, DRAINING, BRIDGING, ROAD-MAKING, AND SAW-MILLS; AND IMPLEMENTS OF FORESTRY.

The use of the level and measuring chain. Chain surveying. Plotting. Levelling and contouring. Measuring and mapping surface areas. Knowledge of the 25″ and 6″ Ordnance Survey maps and their markings. Use of the planimeter. Plane table surveying. The measurement of solid bodies—as timber, stacked bark, faggots, &c., earthwork.

Use and characteristics of materials—as bricks, stone, lime, mortar, cement, concrete, reinforced concrete, iron, steel.

Simple building construction. Roofs of various types. The construction of simple bridges over streams and gullies. Culverts, &c.

The setting out and formation of roads for temporary and permanent use.

Drainage. Gauging of streams. Water-power. Construction of dams, weirs, water channels, &c. The general arrangement and working of estate saw-mills. Timber slides. Forest tramways. Working and management of steam engines and boilers, oil and petrol engines.

The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs.

Detailed drawings from figured sketches.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions. 2. Book-keeping—including the description of books to be kept, the solution of practical questions in Book-keeping and the preparation of Accounts.

EXAMINATION PAPERS, 1932.

SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

(*All questions to be attempted.*)

1. A proprietor wishes to plant annually 100 acres of forest trees; the trees to be raised in a home nursery. How many acres of nursery ground would be required to produce the requisite number of plants, assuming that two-thirds of the annual acreage would be planted with conifers and one-third with hardwoods?

What proportion of the ground would be required for seed beds; and how would you treat the remainder in order to prepare it for the transplants?

2. What are, in your opinion, the most favourable spacing distances at which to plant trees? Choose any two coniferous species and any two hardwood species, and state the planting distances you would select for each and your reasons for the spacings you indicate.

3. In the management of young plantations what ought to be one's guiding motive with regard to thinning (1) conifers, (2) hardwoods?

4. State how you would treat a Scots pine plantation which is nearing maturity, having in view the re-establishment of a new crop by natural regeneration.

5. Explain the method you would adopt in laying down the boundary line of an extensive plantation, assuming that the area to be planted is of a hilly and exposed nature.

6. A plantation 500 acres in extent, consisting of larch, Scots pine, Norway spruce and a few hardwoods, is for sale. The trees are eighty years old, and the owner wishes to know their approximate value before offering them in the open market. Explain how you would proceed to count, classify, and value the trees.

(*Three hours allowed.*)

FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) BOTANY.

(THREE *questions only to be attempted.*)

1. Describe the water-carriage system in a forest tree. What is the importance of water to the tree?

2. Compare and contrast the flowering parts of any four of the following: oak, pine, lime, alder, ash, laburnum.

3. Give a general description of 'dry rot,' including measures of control.

4. What are the conditions for the germination of seeds? State carefully the parts of a seed and the importance of each.

(*b*) ZOOLOGY.

(TWO *questions only to be attempted, of which No.* 1 *must be one.*)

1. Describe fully any insect enemy of a broad-leaved or coniferous tree that has come under your notice. Give your personal observations.

2. Name any four vertebrate animals of forest importance, and describe each under the headings :—

(1) How you would recognise it ?
(2) Whether you consider it harmful or useful, and why ?
(3) How you would encourage or control it ?

3. Give a general description of spiders and mites in their relation to the forester.

(*Two and a half hours allowed.*)

METEOROLOGY AND GEOLOGY.

(FIVE *questions only to be attempted.*)

1. Show how the weathering of rocks is influenced by varying climatic conditions.

2. Define and write short notes on three of the following: (*a*) Isotherms, (*b*) Monsoons, (*c*) Dew-point, (*d*) Isobars, (*e*) Foehn Winds.

3. What are the geological conditions favourable for the obtaining of an Artesian water supply ? Illustrate your answer by diagrams.

4. Distinguish between 'bed-rock' soils and 'drift' soils, and give an account of the characters of one typical soil from each group.

5. What are the features characteristic of a country which has recently undergone glaciation ?

6. Give an account of the characters and distribution in Great Britain of either the *Cretaceous System* or the *Old Red Sandstone.*

(*One hour and a half allowed.*)

FOREST ENGINEERING.

(*All questions to be attempted.*)

1. The foundations for the walls of a building are to consist of Portland cement concrete. State the composition of the concrete you would use. Describe carefully how the concrete should be prepared.

2. Give the contents, in cubic feet, of the following standing trees, with the details of your figures in the beech and elm :—

Description.	Length in feet.	Quarter girt 5½ feet from the ground over bark.
Oak	21	27½
Larch	49	16
Beech	33	24
Elm	29	22½
Scotch Fir . . .	20	15

3. Draw a line ABCD inclined at about 30 degrees to the horizontal. Take points B and C at distances of 4·5 feet and 6 feet from A and D respectively, BC being 7 feet. Set off perpendiculars BF (6 feet) and CE (8 feet) from B and C. Join AF, FE and ED. The figure ADEF represents, to scale, a section of a cutting 100 feet long.

Estimate the quantity of earth, in cubic yards, to be excavated from the cutting.

4. Make up the following Level Book, and check the accuracy of the work.

Plot the section to a horizontal scale of 1 inch to 1 chain, and vertical scale of $\frac{1}{10}$ inch to 10 feet.

B. S.	I. S.	F. S.	Rise.	Fall.	R. L. in feet.	Distance in Links.	Remarks.
5·75					3·0	0	Peg on shore.
12·6		2·15				30	Bottom of cliff.
8·25		1·5				43	
	4·45					48	Top of cliff.
	3·2					136	
	5·35					140	Edge of road.
	4·65					156	Crown of road.
14·7		5·2				172	Edge of road at wall, 6 ft. high.
	12·2					175	Surface of ground behind wall.
	1·7					296	Path.
11·95		1·7				304	
12·4		3·825				394½	
8·75		4·275				485	
	8·25					505	Bottom of retaining wall.
	4·5					505	Top of ditto.
		3·75				555	Surface of ground at house.

5. One of the lines of a chain survey crosses a pond. Give two methods of finding the distance across the pond without using any instrument for measuring angles.

6. A saw-mill is to be driven by a portable steam-engine and boiler. Show by sketches how you would arrange the various machines in the saw-mill shed with respect to the engine. What provision would you make for bringing the logs up to the saw, &c.? Describe the construction of a suitable form of boiler for this kind of work.

(Two hours allowed.)

ARITHMETIC AND BOOK-KEEPING.

I. ARITHMETIC.

(Only FOUR *of the following questions to be attempted.)*

Note.—No marks will be awarded to answers unless workings are shown.

1. Find the simple interest on £4800 for 73 days at 5 per cent.

2. It is desired to construct a path along a field 200 yards long, the path to be 4½ feet wide. If the path is to cost 2s. 6d. per square yard, what will be the total cost of constructing the path?

3. A sum of £97, 10s. is received from an auctioneer (he having deducted commission at 2½ per cent) for the sale of 4 cows and 2 pigs. It is known that the sale price of each cow was twice as much as the price received for each pig. What was the sale price of cows and pigs separately before deduction of the auctioneer's commission?

4. If the weight of a cubic foot of wood is 3 lb., what would be the weight of a plank of wood 15 feet long, 1 foot broad and 6 inches thick?

5. You are given 74 stobs and 2 strainers to fence the side of a field 200 yards long. How far apart would you place the stobs?

II. BOOK-KEEPING.

1. From the following transactions prepare a Cash Book and Ledger Accounts:—

1931.					
Jan.	1.	Cash on hand	£25	0	0
„	2.	Cash received for live stock sold: cattle, £45; sheep, £95	140	0	0
„	3.	Paid into bank	140	0	0
„	4.	Sold stobs on credit to W. Wood	14	0	0
„	6.	Received invoice from R. Elder for repairs to mill engine	21	0	0
„	7.	Paid wages for week	7	0	0
„	9.	Paid R. Elder by cheque £20 (discount allowed, £1)	21	0	0

Jan.	12.	Bought manures from W. Duncan & Co., and paid for same by cash	£12	0	0
„	14.	Received cash from W. Wood in payment of his account	14	0	0
„	14.	Drew cash from bank	10	0	0
„	14.	Paid wages for week	7	0	0
„	14.	Bought feeding-stuffs from Drummond Brothers on credit	15	0	0

2. What books, other than Cash Book and Ledger, do you consider necessary to fully record the transactions in Question 1 above? State which transactions you would record in these other books.

3. The following are the assets and liabilities of an estate: Stock of timber, £1000; horses, £50; tractor and engine, £125; sum due to creditors, £250; poultry, £20; lorries and carts, £25; cash on hand, £5; bank overdraft, £12; implements, £200; cattle, sheep and pigs, £1000; property, £4000.

Prepare a statement to show the capital belonging to the proprietor.

(*Two hours allowed.*)

VETERINARY CERTIFICATES AND MEDALS

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. Tocher, D.Sc., F.I.C., Crown Mansions,
41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT OF ANALYSES.

The fees for analyses made for members of the Society shall, until further notice, be as undernoted:—

The scale of fees applies only to analyses made for agricultural purposes for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed. The scale does not apply to members whose subscriptions are in arrears.

Manures, Feeding-Stuffs, Soils, and Agricultural Products.

The determination of one ingredient in a single sample of a *manure* or of a *feeding-stuff*, ...	5s.
The determination of two or more ingredients in a single sample of a *manure* or of a *feeding-stuff*, . . .	10s.

For example—

Linseed and other cakes, for oil or for albuminoids, .	5s.
Feeding-meals, ground cereals, for oil or for albuminoids,	
Bone-meals, for nitrogen or for phosphate, . .	
Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash, .	
Superphosphate, for soluble phosphate or for insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate or for total phosphate, ...	
Linseed and other cakes, for oil and albuminoids, &c., .	10s.
Feeding-meals, ground cereals, for oil, albuminoids, &c.,	
Bone-meals, for nitrogen, phosphate, &c., ...	
Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash, ...	
Superphosphate, for soluble phosphate and insoluble phosphate, ...	
Thomas-phosphate powder, for citric soluble phosphate and total phosphate, ...	

Limestone, giving the percentage of lime,	**£0**	**5**	**0**
Limestone, complete analysis,	**1**	**0**	**0**
Lime, including ground lime, percentage of alkaline lime,	**0**	**5**	**0**
Lime, including ground lime, complete analysis,	**1**	**0**	**0**
Analysis of soil, to determine fertility and recommendation of manurial treatment,	1	10	0
Complete analysis of soil,	2	10	0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1	0	0

(Not more than four samples per annum will be analysed under the Society's scheme for any one member.)

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the Chemist, when sending samples for analysis, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis,	£0	10	0
,, solids and fat,	0	5	0
,, fat only,	0	2	6

(Not more than six samples of milk per annum will be analysed under the Society's scheme for any one member.)

Butter, full analysis,	0	10	0
,, partial analysis (water and fat),	0	5	0
Cheese,	0	10	0

WATER.

Analysis of water to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually under the Society's scheme).....at the reduced fee of	1	0	0

(Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.)

MISCELLANEOUS.

Search for poisons in food or viscera,	£2	0	0

(Veterinary surgeons are not entitled to have searches made for poisons in food or viscera under the Society's scheme for clients who are not members of the Society.)

Sulphate of copper, percentage of copper and purity,	0	5	0
,, ,, complete analysis,	0	10	0
Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c.,	5s. to £1		

Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the Chemist for analysis.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nutted to a size not larger than walnuts. The nutted cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the Chemist, and one or more duplicates retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the Chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the Chemist.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the Chemist as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

Note.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

(*See 'Transactions,' Fifth Series, vol. xi.*, 1899.)

FORMS OF GUARANTEE

GUARANTEE OF MANURE.

I guarantee that the manure called......................and sold by me to ....contains—

Soluble phosphoric acid =Phosphate of lime dissolved............per cent.
Insoluble phosphoric acid=Phosphate of lime undissolved.........per cent.
Potash salts . . =Potash (K_2O) . . . .per cent.
Total nitrogen . . . .per cent.

Signature of seller........................
Date.................19...

GUARANTEE OF FEEDING-STUFF.

I guarantee that the feeding-stuff called...............and sold by me to ....contains—

.... per cent albuminoids.
.... per cent oil.

Signature of seller........................
Date.................19...

PRICES OF FERTILISERS AND FEEDING-STUFFS FOR SEASON 1933.

(Cash Prices as fixed on 1st February. These prices are subject to variation from month to month or oftener.)

SUPERPHOSPHATES.

Item to be Valued.	Prices per Unit for the undernoted Percentages.		
Phosphoric Acid Dissolved . . =Tricalcium Phosphate Dissolved	13·75 30	16·00 35	18·0 39·3
February Price	£2 12 6	£2 17 6	£3 2 6
Price per Unit	3/9¾	3/7¼	3/5¾

FERTILISERS.

(Other than Superphosphates.)

Name of Fertiliser.	Guarantee.	Price per Ton.			Price per Unit.		
		£	s.	d.		s.	d.
Sulphate of Ammonia (neutral)* . .	20·6 % Nitrogen	6	7	6		6	2¼
Basic Slag †‡	14 % Total Phos. Acid =30·60 % Tric. Phos.	2	6	0		3	3½
,, ,, †	15 % Total Phos. Acid =32·75 % Tric. Phos.	2	7	6		3	2
,, ,, †	15·75 % Total Phos. Acid =34·35 % Tric. Phos.	2	10	0		3	2
Potassic Slag	12 % Phos. Acid =26·21 % Tric. Phos. 6 % Potash	3	10	0	P Pot.	3 4	8¼ 3¼
Bone Meal (Home and Indian) .	4 % Nit., 20 % Phos. Acid =43·68 % Tric. Phos.	7	5	0	N P	16 4	1¼ 0¼
Steamed Bone Flour . . .	0·75 % Nit., 27·5 % Phos. Acid =60·06 % Tric. Phos.	5	15	0	N P	15 3	1 9¼
Calcium Cyanamide (Nitrolim) ‖ . .	20·6 % Nitrogen	7	0	0		6	9½
Ground Mineral Phosphate § . .	26 % Phos. Acid =56·79 % Tric. Phos.	2	7	6		1	10
,, ,, ,, § . .	34 % Phos. Acid =74·26 % Tric. Phos.	3	7	6		1	11¾
Potassic Mineral Phosphate . .	6 % Pot., 21 % Phos. Acid =45·87 % Tric. Phos.	3	2	6	P Pot.	1 3	11 8½
,, ,, ,, . .	9 % Pot., 18 % Phos. Acid =39·30 % Tric. Phos.	3	10	0	P Pot.	2 3	0 9¼
Nitrate of Soda *	15·5 % Nitrogen	8	16	0		11	4¼
Nitro Chalk *	15·5 % ,,	7	5	0		9	4¼
Kainit	14 % Potash	3	5	0		4	7¾
Potash Salts	30 % ,,	5	5	0		3	6
,, ...	20 % ,,	3	15	0		3	9
Sulphate of Potash	48·5 % ,,	11	12	6		4	9½
Muriate of Potash	50 % ,,	9	15	0		3	10¾
Compound Fertiliser (concentrated)	12·5 % Nitrogen 12·5 % Sol. Phos. Acid 15 % Potash	10	12	6¶		7 3 4	0 9 6

Ground Lime, in bags (60 % calcium oxide), at Dufftown or Grange, 39/- per ton; (70 % calcium oxide) at Charleston, 35/- per ton; at Dunbar, 32/6 per ton; (75 % calcium oxide) at Cults, 35/- per ton; at Fushiebridge, 32/6 per ton; (85 % calcium oxide) at Cults, 40/- per ton.

English Ground Lime (76 % calcium oxide), to Edinburgh, 42/- per ton; to Lanark, 41/- per ton; to Stirling, 44/- per ton.

English Ground Lime (95 % calcium oxide), to Edinburgh, 50/- per ton.

Ground Limestone (94 % calcium carbonate), to Edinburgh, 29/- per ton; to Lanark, 28/- per ton; to Stirling, 30/- per ton; in six-ton lots. Bags to be returned to sender.

The prices for all fertilisers are cash prices for two-ton lots in bags at Leith or Glasgow, unless otherwise stated.

*** Carriage paid to any railway station in six-ton lots. Four-ton lots 1/- more per ton.**

† Price at Leith (5/- less Ex. ship).

‡ The fineness of Basic Slag is such that 80 % of the powder will pass through the standard sieve.

‖ Four-ton lots carriage paid.

§ 90 % passing through standard sieve.

¶ Including cost of mixing.

N.B.—When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the **cash price** *per ton at which TWO TONS may be bought in fine sowable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms.*

FEEDING-STUFFS.

Name of Feeding-Stuff.	Price per Ton. £	s.	d.	Name of Feeding-Stuff.	Price per Ton. £	s.	d.
Linseed Cake (Home)	8	5	0	Thirds or Parings	6	2	6
Cotton Seed Cake (Bombay)	..			Dried Distillery Grains	8	15	0
				,, Brewers' Grains	5	17	6
Cotton Seed Cake (Egyptian) at Leith	6	0	0	Feeding Treacle	5	7	6
Ground Nut Cake—Leith—				Locust Beans (Kibbled)*	5	10	0
				Maize (Round Plate)*	5	2	6
Decorticated, 9% Oil, 41% Albuminoids	8	0	0	,, (Flaked)*	6	7	6
				Beans (Imported China) (Glasgow)	7	0	0
Undecorticated, 8% Oil, 31% Albuminoids	7	2	6	Bean Meal	8	0	0
Palm Kernel Cake	7	0	0	Soya Bean Meal (extracted)	8	15	0
				,, Cake	8	5	0
Decorticated Cotton Seed Cake—8% Oil, 43% Albuminoids	7	12	6	Home Oats (Feeding)	6	0	0
				White Fish Meal (Aberdeen)	14	0	0
Decorticated Cotton Seed Meal—7% Oil, 42% Albuminoids	8	0	0	,, ,, (Leith)	14	15	0
Rice Bran Meal	5	15	0	,, ,, (Glasgow)	15	0	0
Broad Bran	7	2	6	Barley Meal (Home)	7	0	0
Medium Bran	6	2	6				

* In Railway Sacks.

CLASSIFICATION OF MANURES.

BONE MEALS	Genuine Bone Meal contains about 20 per cent Phosphoric Acid equal to 43·7 per cent Tricalcium Phosphate, and from 2·75 per cent to 4 per cent Nitrogen. If phosphates are low, nitrogen will be high, and conversely.
STEAMED BONE FLOUR	Ground to flour, and containing 27·5 per cent Phosphoric Acid equal to about 60 per cent Phosphates and about ·8 per cent Nitrogen.
MIXTURES AND COMPOUND MANURES	To be valued according to the following units: Nitrogen, 7/-; Soluble Phosphoric Acid, 3/9; Insoluble Phosphoric Acid, 2/9; and Potash, 4/6. The value so arrived at will be the value at Leith or Glasgow, exclusive of the cost of mixing, bags and bagging, which may be taken on an average at about 20/- per ton.
DISSOLVED BONES	Must be pure—*i.e.*, containing nothing but natural bones and sulphuric acid.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the results of analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash; a good sample (see p. 52) will be guaranteed to contain 50 per cent of oxide of potash. All potash manures are valued according to the amount of potash (oxide of potash) they yield, and muriate of potash yields 50 per cent of potash (K_2O)—*i.e.*, 50 units per ton; and as a ton of muriate of potash costs £9, 15s., the price of the unit is the fiftieth part of that—viz., 3/10¾. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 48 per cent, the price per ton will be 7/9½ (twice 3/10¾) less—viz., £9, 7s. 2½d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the UNITS in the following manner:—

Take the results of analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphoric acid)
Phosphates undissolved (or insoluble phosphoric acid)
Total phosphoric acid
Nitrogen
Potash

No other items but these are to be valued.

Should the results of analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is ground mineral phosphate—

The proportion of phosphate present in a sample guaranteed to contain 26 per cent phosphoric acid, may be 24 per cent phosphoric acid. The price per unit of phosphoric acid in ground mineral phosphate (26 per cent grade) is 1s. 10d. The value of ground mineral phosphate containing 24 per cent phosphoric acid is therefore 24 times 1s. 10d., equal to £2, 4s. per ton.

Suppose the manure is a superphosphate—say an ordinary superphosphate, 15 per cent soluble phosphoric acid,—the price per unit of phosphoric acid in superphosphate (16 per cent grade) is 3/7¼ at Leith.

It is valued thus—

Soluble phosphoric acid. 15 times 3/7¼, equal to £2, 14s. 1d.

Insoluble phosphoric acid is not valued in a superphosphate.

Suppose the manure is (1) a compound fertiliser containing 4 per cent nitrogen, 7 per cent soluble phosphoric acid, 3 per cent insoluble phosphoric acid, and 4 per cent potash; and (2) a concentrated compound fertiliser containing 12·5 per cent nitrogen, 12·5 per cent soluble phosphoric acid, and 15 per cent potash. From the units given on p. 53 for "Mixtures and Compound Manures," the values of these two compound fertilisers are obtained as follows:—

The value of the—

		(1)				(2)		
Nitrogen will be	£1	8	0	per ton	£4	7	6	per ton.
Soluble phosphoric acid will be	1	6	3	,,	2	6	10	,,
Insoluble phosphoric acid will be	0	8	3	,,		...		,,
Potash will be	0	18	0	,,	3	7	6	,,
	£4	0	6		£10	1	10	

The value of these manures will thus be £4, 0s. 6d. and £10, 1s. 10d. per ton, exclusive of the cost of mixing, bags and bagging, which may be taken on an average at about 20/- per ton.

Note.—The units have reference solely to the MARKET PRICES of MANURES, and not to their AGRICULTURAL VALUES.

TABLE OF COMPENSATION VALUES FOR 1933.

TABLE SHOWING THE VALUE OF FEEDING-STUFFS AS MANURE PER TON, AND THE COMPENSATION VALUE PER TON OF FOOD CONSUMED, BASED ON THE AVERAGE UNIT PRICES OF FERTILISERS FOR 1933.

The following is a Table showing (under Section A) the average proportions of digested nitrogen, undigested nitrogen, phosphoric acid, and potash present in the feeding-stuffs named. The Table also shows the value per unit of nitrogen (digested and undigested), phosphoric acid, and potash, the prices per unit being the value per unit for compound manures prevailing for 1933. Under Section B of the Table is shown the compensation value per ton of food consumed for each of the feeding-stuffs named, based on the unit prices for 1933. Column (1) of Section B of the Table shows the value per ton recovered in dung; Col. (2) of the same section shows the value of the lasting part of dung per ton; while the remaining three columns show the residual values per ton after one crop, two crops, and three crops have been removed.

In accordance with the decision arrived at by the Committee appointed by a representative meeting of Scottish agriculturists, who reported in September 1917 on the "Compensation for Manurial Improvements and Cumulative Fertility," under the Agricultural Holdings (Scotland) Act, 1908, the value of undigested nitrogen per ton as manure is calculated as being 70 per cent of the value of digested nitrogen. The residual value, after one crop has been removed, is taken as one-half of the original residual value. Residual values, after one crop has been removed, are reduced by one-half after each crop.

Foods.	Value per									
	Digested Nitrogen.					Undigested Nitrogen.				
	Per cent in food. (1)	Value at 7s. per unit. (2)		Two-fifths value to manure. (3)*		Per cent in food. (4)	* Value at 5s. per unit. (5)		Three-fourths value to manure. (6)	
		s.	d.	s.	d.		s.	d.	s.	d.
Cotton-cake, decorticated	5·92	41	5	16	7	0·98	4	11	3	8
Cotton-cake, undecorticated	2·73	19	1	7	8	0·81	4	1	3	1
Linseed-cake	4·08	28	7	11	5	0·67	3	4	2	6
Linseed	3·28	23	0	9	2	0·32	1	7	1	2
Soya-bean cake	6·10	42	8	17	1	0·75	3	9	2	10
Palm-nut cake	1·88	13	2	5	3	0·62	3	1	2	4
Cocoa-nut cake	2·65	18	7	7	5	0·75	3	9	2	10
Earth-nut cake	6·86	48	0	19	2	0·76	3	10	2	11
Rape cake	3·97	27	9	11	1	0·93	4	8	3	6
Beans	3·48	24	4	9	9	0·52	2	7	1	11
Peas	3·10	21	8	8	8	0·50	2	6	1	11
Wheat	1·49	10	5	4	2	0·31	1	7	1	2
Barley	1·16	8	1	3	3	0·49	2	5	1	10
Oats	1·52	10	8	4	3	0·48	2	5	1	10
Maize	1·22	8	6	3	5	0·48	2	5	1	10
Rice-meal	1·08	7	7	3	0	0·82	4	1	3	1
Locust beans	0·82	5	9	2	4	0·38	1	11	1	5
Malt	1·34	9	5	3	9	0·36	1	10	1	5
Malt culms	3·12	21	10	8	9	0·78	3	11	2	11
Bran	1·98	13	10	5	6	0·52	2	7	1	11
Brewers' and distillers' grains (dried)	2·34	16	5	6	7	0·96	4	10	3	8
Brewers' and distillers' grains (wet)	0·59	4	2	1	8	0·22	1	1	0	10
Dried distillery dreg	3·45	24	2	9	8	1·86	9	4	7	0
Clover hay	1·21	8	6	3	5	1·03	5	2	3	11
Meadow hay	0·88	6	2	2	6	0·62	3	1	2	4
Wheat straw	0·02	0	2	0	1	0·43	2	2	1	8
Barley straw	0·10	0	8	0	3	0·30	1	6	1	2
Oat straw	0·17	1	2	0	6	0·33	1	8	1	3
Mangolds	0·15	1	1	0	5	0·07	0	4	0	3
Swedes	0·16	1	1	0	5	0·09	0	5	0	4
Turnips	0·13	0	11	0	4	0·05	0	3	0	2
Fish-meal	8·08	56	7	22	8	0·90	4	6	3	5

See last paragraph of explanatory note to the Table.

A. TON AS MANURE.						B. COMPENSATION VALUE PER TON OF FOOD CONSUMED.				
Phosphoric Acid.			Potash.			† (1) Value recovered in dung.	‡ (2) Value of lasting part of dung.	Residual Value after		
Per cent in food. (7)	Value at 3s. 9d. per unit. (8)	Three-fourths value to manure. (9)	Per cent in food. (10)	Value at 4s. 6d. per unit. (11)	Three-fourths value to manure. (12)	(13) *	(14)	* (3) One crop. (15)	* (4) Two crops. (16)	* (5) Three crops. (17)
	s. d.	s. d.		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
3·10	11 8	8 9	2·00	9 0	6 9	35 9	19 2	9 7	4 10	2 5
2·00	7 6	5 8	2·00	9 0	6 9	23 2	15 6	7 9	3 11	1 11
2·00	7 6	5 8	1·40	6 4	4 9	24 4	12 11	6 6	3 3	1 7
1·54	5 9	4 4	1·37	6 2	4 8	19 4	10 2	5 1	2 7	1 3
1·30	4 11	3 8	2·20	9 11	7 5	31 0	13 11	7 0	3 6	1 9
1·20	4 6	3 5	0·50	2 3	1 8	12 8	7 5	3 9	1 10	0 11
1·40	5 3	3 11	2·00	9 0	6 9	20 11	13 6	6 9	3 5	1 8
2·00	7 6	5 8	1·50	6 9	5 1	32 10	13 8	6 10	3 5	1 9
2·50	9 5	7 1	1·50	6 9	5 1	26 9	15 8	7 10	3 11	2 0
1·10	4 2	3 2	1·30	5 10	4 5	19 3	9 6	4 9	2 5	1 2
0·85	3 2	2 5	0·96	4 4	3 3	16 3	7 7	3 10	1 11	0 11
0·85	3 2	2 5	0·53	2 5	1 10	9 7	5 5	2 9	1 4	0 8
0·75	2 10	2 2	0·55	2 6	1 11	9 2	5 11	3 0	1 6	0 9
0·60	2 3	1 8	0·50	2 3	1 8	9 5	5 2	2 7	1 4	0 8
0·60	2 3	1 8	0·37	1 8	1 3	8 2	4 9	2 5	1 2	0 7
0·60	2 3	1 8	0·37	1 8	1 3	9 0	6 0	3 0	1 6	0 9
0·80	3 0	2 3	0·80	3 7	2 9	8 9	6 5	3 3	1 7	0 10
0·80	3 0	2 3	0·60	2 8	2 0	9 5	5 8	2 10	1 5	0 9
2·00	7 6	5 8	2·00	9 0	6 9	24 1	15 4	7 8	3 10	1 11
2·70	10 2	7 8	1·45	6 6	4 11	20 0	14 6	7 3	3 8	1 10
1·61	6 0	4 6	0·20	0 11	0 8	15 5	8 10	4 5	2 3	1 1
0·42	1 7	1 2	0·05	0 3	0 2	3 10	2 2	1 1	0 7	0 3
0·44	1 8	1 3	0·22	1 0	0 9	18 8	9 0	4 6	2 3	1 2
0·57	2 2	1 8	1·50	6 9	5 1	14 1	10 8	5 4	2 8	1 4
0·40	1 6	1 2	1·60	7 2	5 5	11 5	8 11	4 6	2 3	1 1
0·24	0 11	0 8	0·80	3 7	2 9	5 2	5 1	2 7	1 3	0 8
0·18	0 8	0 6	1·00	4 6	3 5	5 4	5 1	2 7	1 3	0 8
0·24	0 11	0 8	1·00	4 6	3 5	5 10	5 4	2 8	1 4	0 8
0·07	0 3	0 2	0·40	1 10	1 5	2 3	1 10	0 11	0 6	0 3
0·06	0 3	0 2	0·22	1 0	0 9	1 8	1 3	0 8	0 4	0 2
0·05	0 2	0 2	0·30	1 4	1 0	1 8	1 4	0 8	0 4	0 2
7·24	27 2	20 5	0·50	2 3	1 8	48 2	25 6	12 9	6 5	3 2

---

† The figures in column (13) are the sum of columns (3), (6), (9), and (12).

‡ The figures in column (14) are the figures in column (13) from which the corresponding figures in column (3) have been subtracted.

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—(vacant).

The Society has fixed the following scale of charges for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number as appearing in the undernoted Scale of Charges. The charge for examination must be paid at the time of application, and the carriage or postage on all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed . . 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention . . . 1s.
3. Report on any disease affecting farm crops . . . 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value . . . . 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

NOTE.—Members are reminded that Seeds may now be tested at the Department of Agriculture for Scotland Seed-Testing Station. Samples should be addressed to T. Anderson, Esq., Seed-testing Station, East Craigs, Corstorphine, Midlothian.

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—R. Stewart MacDougall, M.A., D.Sc., LL.D., Ivy Lodge, Gullane.

Arrangements have been made with Dr MacDougall to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

(*a*) Farm crops.
(*b*) Stored grain.
(*c*) Garden and greenhouse plants.
(*d*) Fruit and fruit trees.
(*e*) Forest trees and stored timber.
(*f*) Live stock (including poultry).

Members consulting Dr MacDougall should forward with their queries specimens of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Letters and parcels (carriage or postage paid) should be addressed to R. Stewart MacDougall, Esq., M.A., D.Sc., LL.D., Ivy Lodge, Gullane.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted: this fee should be sent to him along with the application for information.

PREMIUMS OFFERED
1933

GROUP 1.—REPORTS.

GENERAL REGULATIONS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, or circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty

acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Pounds. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

SECTION 5.—FORESTRY.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

GROUP II.—DISTRICT GRANTS.

APPLICATIONS.

Forms of Application may be obtained from the Secretary, 8 Eglinton Crescent, Edinburgh 12, which should be completed and returned on or before 1ST NOVEMBER next, in respect of a Grant commencing in the following year.

Note.—A Local Society, &c., desirous of **renewing** a particular class of Grant may not participate thereunder until the undernoted number of years have elapsed from the termination of the last Grant. Application may be made within those periods, however, for a Grant in any other class :—

Class.		Interval.
1.	Show Grant of £12 for Horses, Cattle, Sheep, and Pigs	4 years.
2.	Stallion Grant of £15	"
3.	Two Silver Medals in aid of Premiums . . .	2 years.
4.	Special Grants	—
5.	Grant of £10 to Federations of S.W.R.I. . . .	2 years.

1. GRANTS TO LOCAL SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

REGULATIONS, 1933.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to Local Societies for prizes for *Breeding Animals* in any of the following Classes of Stock, viz. :—

Cattle.

Shorthorn.
Aberdeen-Angus.
Galloway.
Belted Galloway.
Highland.
Ayrshire.
British Friesian.
Red Poll.
Jersey.
Shetland.

Pigs.

Any Pure Breed.

Horses.

Draught Horses.
Hunters.
Hackneys.
Ponies.
Shetland Ponies

Sheep.

Blackface.
Cheviot.
Border Leicester.
Half-Bred.
Shropshire.
Oxford Down.
Suffolk.
Wensleydale.

Cross-bred [1] animals are not eligible. The Prizes must be confined to *Breeding* Animals ; " bullocks," " geldings," " wethers," and " hog pigs " are excluded.

---

[1] *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from local Societies which desire to use their grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society **must be a Member of the Highland and Agricultural Society of Scotland.**

3. GRANT TO SOCIETY, £12.—The portion of the Grant to any one Local Society shall not exceed the sum of £12 in any one year.

4. ALLOCATION OF GRANT.—The Grant from the Highland and Agricultural Society shall not be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; **and the Prizes must be announced in the Premium List and Catalogue of the Show as "given by the Highland and Agricultural Society of Scotland."**

5. CONTINUANCE OF GRANT—THREE YEARS.—The Money Grant shall continue for three alternate years, provided always that the Local Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes.

If no competition takes place for two consecutive years the Grant expires.

6. MEDALS IN INTERMEDIATE YEARS.—In the two intermediate years the Highland and Agricultural Society will place three Silver Medals at the disposal of each Local Society, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

7. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no provincial Show may be held in that district in the **three months** immediately **preceding** the date of the General Show. **In the event of a Show being held, the entire grant to the Society will be cancelled.**

8. RULES OF COMPETITION.—The Rules of Competition for the Premiums, the funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. AREA AND PARISHES—FIVE PARISHES.—When making application for Grants from the Highland and Agricultural Society, the Local Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no Local Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

10. REPORTS. — Forms of Report will be furnished to the Secretaries of Local Societies. Both in the years when the Grant is offered and in the **two intermediate years,** detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than **1st November.** These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked on the Form. The Grant will lapse if no Report is lodged.

11. GRANTS—WHEN PAID.—The Grants made to Local Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by

the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the Local Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. Renewal of Grant.—No application for renewal of a Money Grant to a Local Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. Disposal of Applications.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those Local Societies which have been longest off the list.

Grants in 1933.

Final (Alternate) Year—MONEY GRANT.

1. STRATHBOGIE FARMER CLUB.
   Convener—William Marshall, Craigwillie, Huntly.
   Secretary—John Stuart, Commercial Bank Buildings, Huntly.
   Granted 1927. (Grants in abeyance 1928 and 1929—not awarded.)

2. DALBEATTIE AGRICULTURAL SOCIETY.
   President—W. J. H. Maxwell of Munches, Dalbeattie.
   Secretary—J. E. Milligan, The Clydesdale Bank, Dalbeattie.
   Granted 1928. (Grant in abeyance 1932—no Show held.)

3. BATHGATE AGRICULTURAL ASSOCIATION.
   Convener—Frank Dawson, Wester Drumcross, Bathgate.
   Secretary—Harold A. E. M'Kill, Commercial Bank House, Harthill.
   Granted 1928. (Grant in abeyance 1929—not awarded.)

4. CROMAR, UPPER DEE AND DONSIDE AGRICULTURAL ASSOCIATION.
   Convener—Charles Strachan, Tillyorn, Lumphanan, Aberdeen.
   Secretary—William Anderson, Home Farm, Hopewell, Tarland.
   Granted 1929.

5. MONKWOOD AND MINISHANT DISTRICT SOCIETY.
   Convener—John Tweedily, 17 St Leonard's Road, Ayr.
   Hon. Secretary and Treasurer—Walter Gardner, M.R.C.V.S., Woodside, Maybole.
   Granted 1929.

6. MOUNT BLAIR AGRICULTURAL SOCIETY.
   Convener—James M'L. Marshall, Bleaton Hallet, Blairgowrie.
   Secretary—Alexander F. M'Intosh, Dunay, Blacklunans, Blairgowrie.
   Granted 1929.

7. FORMARTINE AGRICULTURAL ASSOCIATION.
   Convener—Alexander P. Watson, Allathan, Udny.
   Joint-Secretaries—Alfred Marr and David S. Minto, Ardmore, Udny.
   Granted 1929.

4th (Intermediate) Year—3 SILVER MEDALS.

8. ANNAN AND DISTRICT AGRICULTURAL SOCIETY.
Convener—John Roddick of Greenbank, Annan.
Secretary—James Risk, Kinmount Estate Office, Annan.
Granted 1928. (Grants in abeyance 1930, on account of Dumfries Show; in 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

9. LOCKERBIE AGRICULTURAL SOCIETY.
Convener—R. Jardine Paterson of Balgray, Lockerbie.
Secretary—Thomas Henderson, Solicitor, Lockerbie.
Granted 1929. (Grant in abeyance 1930, on account of Dumfries Show.)

10. KENNETHMONT AGRICULTURAL ASSOCIATION.
Convener—Charles E. N. Leith-Hay of Leith Hall, Kennethmont.
Secretary—John M. Reid, Ardlair Farm, Kennethmont.
Granted 1930.

11. MAR AGRICULTURAL ASSOCIATION.
Convener—Colonel J. Barclay Milne, of Kinaldie, Kinaldie.
Secretaries and Treasurers—W. S. and P. Morrison, Blackchambers, Kinellar.
Granted 1930.

12. UPPER DEESIDE AGRICULTURAL ASSOCIATION.
Convener—Robert Carr, Balnacraig, Banchory.
Secretary—George J. Wilson, The Bank House, Torphins.
Granted 1930.

13. MID-ARGYLL AGRICULTURAL SOCIETY.
Convener—James R. Carmichael, Creggans, Inveraray.
Secretary—Neil L. M'Vicar, Ri-Cruin, Kilmartin, Argyll.
Granted 1930.

14. DUNBARTONSHIRE AGRICULTURAL SOCIETY.
Chairman—A. Y. Allan, Aitkenbar, Dumbarton.
Secretary—George Lawrence, Union Bank of Scotland, Ltd., Dumbarton.
Granted 1930.

15. GATEHOUSE DISTRICT AGRICULTURAL SOCIETY.
Convener—Neil J. W. H. Murray-Usher, Cally, Gatehouse-of-Fleet.
Secretary—Thomas Mackenzie, Estate Agency, Castle Douglas.
Granted 1930.

16. CARNWATH AGRICULTURAL SOCIETY.
Convener—Andrew S. Lawson, Guildhouse, Forth.
Secretary and Treasurer—A. M. White, Commercial Bank of Scotland Ltd., Carnwath.
Granted 1930.

17. SPEY, AVEN AND FIDDICHSIDE FARMER CLUB.
Convener—George Grant, Glenfarclas, Blacksboat.
Secretary—R. Dick Stuart, Seafield Square, Rothes.
Granted 1930.

3rd (Alternate) Year—MONEY GRANT.

18. DALKEITH AGRICULTURAL SOCIETY.
Convener—William Allison, Campend, Dalkeith.
Secretary—William Carnegie, Auction Mart, Dalkeith.
Granted 1930. (Grant in abeyance 1931, on account of Hundredth Show, Edinburgh.)

19. BUCHLYVIE AND GARTMORE AGRICULTURAL ASSOCIATION.
Convener—James Stewart, Cashley, Buchlyvie.
Secretary—D. J. Muirhead, Wester Arngibbon, by Kippen.
Granted 1930. (Grant in abeyance 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

20. GARGUNNOCK FARMERS' CLUB.
Convener—John Risk, Culmore, Kippen Station.
Secretary—James Risk, Culmore, Kippen Station.
Granted 1930. (Grant in abeyance 1931.)

21. UPPER DONSIDE AGRICULTURAL ASSOCIATION.
Convener—James Thomson, Mains, Glenbuchat, Aberdeenshire.
Secretary—Alexander Kellas, Hillockhead, Cushnie, by Alford.
Granted 1931.

22. LATHERON LANDHOLDERS' SHOW SOCIETY.
Convener—John A. Mowat, Nottingham Farm, Latheron, Caithness.
Secretary—A. G. Doull, Lybster, Caithness.
Granted 1931.

23. SOUTH UIST AND BENBECULA CATTLE SHOW SOCIETY.
Convener—Dr Bartlett, Castlebay, Isle of Barra.
Secretary—Kenneth Macleod, The Schoolhouse, Balivanich, Nunton, Lochboisdale, South Uist.
Granted 1931.

24. DUNBLANE AGRICULTURAL SOCIETY.
Convener—A. H. Anderson, The Firs, Dunblane.
Secretary and Treasurer—John Stewart, Solicitor, Dunblane.
Granted 1931.

25. BORDER UNION AGRICULTURAL SOCIETY.
Convener—J. Hastie Brydon, Haddon, Kelso.
Secretary—J. S. Roberton, Yetholm Mains, Kelso.
Granted 1931.

2nd (Intermediate) Year—3 SILVER MEDALS.

26. LAMMERMOOR PASTORAL SOCIETY.
Convener—Walter Elliot, Harehead, Duns.
Hon. Secretary and Treasurer—Thomas Stephenson, Duns.
Granted 1931. (Grant in abeyance 1931.)

27. KINGLASSIE AGRICULTURAL SOCIETY.
Convener—William Meiklem, Bennochy Park, Kirkcaldy.
Secretary and Treasurer—D. Mackenzie, Commercial Bank of Scotland Ltd., Thornton, Fife.
Granted 1931. (Grant in abeyance 1931—Show abandoned on account of Foot-and-Mouth Disease Order.)

28. **ESKDALE AND LIDDESDALE AGRICULTURAL AND PASTORAL SOCIETY.**
Convener—Captain Walter D. Elliot of Dumfedling, Langholm.
Secretary—James Fairful, 56A Henry Street, Langholm.
Granted 1932.

29. **NITHSDALE AGRICULTURAL SOCIETY.**
Convener—Charles W. Ralston, Dabton, Thornhill, Dumfriesshire.
Secretary—W. M. Henderson, Solicitor, Thornhill, Dumfriesshire.
Granted 1932.

30. **SANQUHAR FARMERS' SOCIETY.**
Convener—James Hunter, Carco, Sanquhar.
Secretary—W. M. Henderson, Solicitor, Sanquhar.
Granted 1932.

31. **SKYE AGRICULTURAL SOCIETY.**
Convener—Alexander MacCallum, Department of Agriculture for Scotland, Estates Office, Portree, Isle of Skye.
Secretary—Malcolm MacAulay, Department of Agriculture for Scotland, Estates Office, Portree, Isle of Skye.
Granted 1932.

32. **KINCARDINESHIRE FARMERS' CLUB.**
Convener—James G. Nicol, Wairds, Portlethen.
Secretary—James B. Connon, Solicitor, Stonehaven.
Granted 1932.

33. **STRATHAVEN AND DISTRICT AGRICULTURAL EXPOSITION.**
Convener—Peter Meikle, M.R.C.V.S., Avonholme, Strathaven.
Secretary—Alexander O. Jennings, Welland Villa, Strathaven.
Granted 1932.

34. **MORAYSHIRE FARMER CLUB.**
Convener—James P. Brown, Dipple, Fochabers.
Secretary—W. Rose Black, Solicitor, Elgin.
Granted 1932.

35. **WEST LINTON AGRICULTURAL SOCIETY.**
Convener—Captain R. J. Thomson of Kaims, West Linton.
Secretary—William Forbes, Bank Chambers, West Linton.
Granted 1932.

36. **DOUNE AGRICULTURAL ASSOCIATION.**
Convener—R. W. Fairweather, Park House, Blair-Drummond.
Secretary—A. Mitchell Holmes, Deanston Farm, Doune.
Granted 1932.

37. **WIGTOWN AGRICULTURAL SOCIETY.**
Convener—James Mitchell, Rochdale House, Wigtown.
Secretary—Gavin Coupland, The Clydesdale Bank, Newton-Stewart.
Granted 1932.

1st (Alternate) Year—MONEY GRANT.

38. TIREE AGRICULTURAL SHOW SOCIETY.
Convener—Malcolm M'Lean, Kirkapol, Tiree.
Secretary—William G. Macdiarmid, Island House, Tiree.
Granted 1932. (Grant in abeyance 1932—no Show held.)

39. BUCHAN AGRICULTURAL SOCIETY.
President—George H. Ferguson, Monyruy, Longside.
Secretary—Robert Scott, 1 Narrow Lane, Peterhead.
Granted 1933.

40. VALE OF ALFORD AGRICULTURAL ASSOCIATION.
Convener—Colonel Harry Forbes, D.S.O., Montgarrie House, Alford.
Secretary—Robert S. Law, New Keig, Keig, Aberdeen.
Granted 1933.

41. LARGS, CUMBRAE AND WEMYSS BAY AGRICULTURAL SOCIETY.
Convener—John S. Wilson, 21 Crawfurd Street, Greenock.
Secretary—Alexander Grant, Crawfordlea, Brisbane Road, Largs.
Granted 1933.

42. CENTRAL BANFFSHIRE FARMERS' CLUB.
Convener—George Donald, Ladyhill, Grange, Keith.
Secretary—John C. Gray, 65 Moss Street, Keith.
Granted 1933.

43. DUMFRIES AGRICULTURAL SOCIETY.
Convener—James A. Ferguson, Burrance of Courance, Lockerbie.
Secretary—David Fergusson, 75 Buccleuch Street, Dumfries.
Granted 1933.

44. WESTERN DISTRICT OF FIFE AGRICULTURAL SOCIETY.
Convener—Major W. B. Robertson, M.C., of Colton, Dunfermline.
Secretary—W. Craig Husband, Union Bank Chambers, Dunfermline.
Granted 1933.

45. KIRKPATRICK-DURHAM HORTICULTURAL AND AGRICULTURAL SOCIETY.
Convener—James Carson, Barwhillanty, Parton, Castle Douglas.
Secretary—J. A. Peacock, Kirkpatrick-Durham, Dalbeattie.
Granted 1933.

46. SHOTTS CALDERWATERHEAD FARMERS' SOCIETY.
Convener—John Weir, Shottsburn, Salsburgh, Motherwell.
Secretary—Thomas Sommerville, 47 Bon Accord Crescent, Shotts.
Granted 1933.

47. STRATHORD AGRICULTURAL SOCIETY.
Convener—William Chalmers, Logiebride, Bankfoot.
Secretary—A. J. Bisset, Ellonbank, Bankfoot.
Granted 1933.

48. WHITBURN AGRICULTURAL SOCIETY.
Convener—James G. Sibbald, Hardhill Farm, Bathgate.
Secretary—P. A. Simpson, Commercial Bank of Scotland, Whitburn, West Lothian.
Granted 1933.

Special Grant of £7, 6s. 3d. for 1933.

49. KINGLASSIE AGRICULTURAL SOCIETY. (See also No. 27.)
Convener—William Meiklem, Bennochy Park, Kirkcaldy.
Secretary and Treasurer—D. Mackenzie, Commercial Bank of Scotland Ltd., Thornton, Fife.

Grants in Abeyance 1933, on account of Dundee Show—Perth Show Division (Regulation 7).

None.

2. GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

REGULATIONS, 1933.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year. The Grant shall be used as a Premium, or part of a Premium, to be paid by the Association to the owner of the Stallion engaged.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are registered in the Register of Certified Draught Stallions published by the Department of Agriculture for Scotland. (For information regarding the Registration of Stallions, apply to the Secretary of the Department of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. RULES 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

Grants in 1933.

Final (Alternate) Year—MONEY GRANT.

1. NAIRNSHIRE FARMING SOCIETY.
   Convener—Captain Joseph Mackay, Glebe End, Nairn.
   Secretary—A. J. MacKintosh, St Colms, Auldearn, Nairn.
   Granted 1929.

2. ROUSAY AGRICULTURAL HORSE-BREEDING SOCIETY.
   Convener—R. S. Mainland, Westness, Rousay, Orkney.
   Secretary—John Linklater, Westness Farm, Rousay, Orkney.
   Granted 1929.

3. SELKIRK AND GALASHIELS AGRICULTURAL SOCIETY.
   Convener—John Elliot, Jun., Blackhaugh, Clovenfords, Galashiels.
   Secretary—James L. Waddie, Church Bank, Elm Row, Galashiels.
   Granted 1929.

4. SCOTTISH CENTRAL HORSE-BREEDING ASSOCIATION.
   Convener—James Stewart, Cashley, Buchlyvie.
   Secretary and Treasurer—Thomas M'Lay, Dunvegan, Causewayhead, Stirling.
   Granted 1929.

4th (Intermediate) Year—Grant in Abeyance.

5. MID-ARGYLL AGRICULTURAL SOCIETY.
   Convener—James R. Carmichael, Creggans, Inveraray.
   Secretary—Neil L. M'Vicar, Ri-Cruin, Kilmartin.
   Granted 1930.

6. UPPERWARD OF LANARKSHIRE AGRICULTURAL ASSOCIATION.
   Convener—James Brown, Jun., Westraw, Thankerton.
   Secretary—R. R. Black, Royal Bank of Scotland, Lanark.
   Granted 1930.

7. SPEY, AVÊN AND FIDDICHSIDE FARMER CLUB.
   Convener—George Grant, Glenfarclas, Blacksboat.
   Secretary—R. Dick Stuart, Seafield Square, Rothes.
   Granted 1930.

8. STIRLING DISTRICT CLYDESDALE HORSE SOCIETY.
   Convener—James More, Woodyett, Gargunnock.
   Secretary—Alexander Paterson, Solicitor, Stirling.
   Granted 1930.

3rd (Alternate) Year—MONEY GRANT.

9. MORAYSHIRE CLYDESDALE HORSE-BREEDING ASSOCIATION.
Convener—John Robertson, Brodieshill, Alves, Forres.
Secretary—William Thomson, 149 High Street, Elgin.
Granted 1930. (Grant in abeyance 1930—postponed.)

10. ISLAY SMALL LANDHOLDERS' SOCIETY.
Convener—John G. Morrison of Islay, Islay House, Islay.
Secretary—Iain M. Mactaggart, Bowmore, Islay.
Granted 1931.

11. DEESIDE STOCK IMPROVEMENT SOCIETY.
Convener—William Adam, Bush, Banchory.
Secretary—Peter Ross, Barns of Durris, Crathes.
Granted 1931.

12. STONEHAVEN DISTRICT HORSE-BREEDING ASSOCIATION.
President—John Eddie, Hallhill, Kinneff, Inverbervie.
Secretary—James B. Connon, Solicitor, Stonehaven.
Granted 1931.

13. STRATHSPEY FARMERS' CLUB.
Convener—D. M. Allan, Ballintomb, Grantown-on-Spey.
Secretary—John G. MacDougall, Dunollie, Grantown-on-Spey.
Granted 1931.

14. SHAPANSAY AGRICULTURAL ASSOCIATION.
Convener—William T. Wood, Balfour Mains, Shapansay, Orkney.
Secretary—D. L. Kemp, Bayview, Shapansay, Orkney.
Granted 1931.

2nd (Intermediate) Year—Grant in Abeyance.

15. SANDAY AGRICULTURAL ASSOCIATION.
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Wallace, Prattsfauld, Sanday, Orkney.
Granted 1931. (Grant in abeyance 1931—postponed.)

16. UPPER DONSIDE AGRICULTURAL ASSOCIATION.
Convener—James Thomson, Mains, Glenbuchat, Aberdeenshire.
Secretary—Alexander Kellas, Hillockhead, Cushnie, by Alford.
Granted 1932.

17. UPPER NITHSDALE HORSE SOCIETY.
Convener—Charles W. Ralston, Dabton, Thornhill, Dumfriesshire.
Secretary—W. M. Henderson, Solicitor, Thornhill, Dumfriesshire.
Granted 1932.

18. WEST OF FIFE CLYDESDALE ENTIRE HORSE SOCIETY.

Convener—Robert Jeffrey, Drumfin, Torryburn.
Secretary—A. J. Auchterlonie, Leckerstone, Dunfermline.
Granted 1932.

19. HOWE O' THE MEARNS HORSE-BREEDING SOCIETY.

Convener—James Anderson, Pitcarry, Inverbervie.
Secretary—Alexander Anderson, Burnton, Laurencekirk.
Granted 1932.

20. KINROSS-SHIRE AGRICULTURAL SOCIETY.

President—Captain R. Moubray of Naemoor, Rumbling Bridge.
Hon. Secretary—J. A. Hepburn, M.R.C.V.S., Ardmohr, Milnathort.
Granted 1932.

21. MORAY STOCK IMPROVEMENT SOCIETY.

President—George Douglas of Calcots, Elgin.
Secretary—W. Rose Black, Solicitor, Elgin.
Granted 1932.

22. SOUTH RONALDSHAY AND BURRAY HORSE-BREEDING AND STOCK IMPROVEMENT SOCIETY.

Convener—John Tomison, Halcro, South Ronaldshay, Orkney.
Secretary—George A. Ryrie, Hall of Herston, South Ronaldshay, Orkney.
Granted 1932.

1st (Alternate) Year—MONEY GRANT.

23. TIREE AGRICULTURAL (HEAVY HORSE BREEDING) SOCIETY.

Convener—William G. Macdiarmid, Island House, Tiree.
Secretary—Malcolm M'Lean, Kirkapol, Tiree.
Granted 1933.

24. CENTRAL BANFFSHIRE FARMERS' CLUB.

Convener—George Donald, Ladyhill, Grange, Keith.
Secretary—John C. Gray, 65 Moss Street, Keith.
Granted 1933.

25. CLACKMANNANSHIRE UNION AGRICULTURAL SOCIETY.

Convener—Robert M'Gee, Blackfaulds, Alloa.
Secretary—G. F. Piggott, Union Street, Alloa.
Granted 1933.

26. EAST OF FIFE ENTIRE HORSE SOCIETY.

Convener—John Gray, Bonnyton, Stravithie.
Secretary—James Gray, Stravithie Mains, Stravithie.
Granted 1933.

3. MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

Regulations, 1933.

The Society, being anxious to co-operate with local Societies, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion or Mare of any pure breed included in Section 1.
3. Best Tup or Pen of Ewes of any pure breed included in Section 1.
4. Best Boar, Sow, or Breeding Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best kept Fences.
17. Best Sheep-Shearer.
18. Most expert Hedge-Cutter.
19. Most expert Labourer at Draining.
20. Best Maker of Oatcakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.

2. The classes for which Medals are granted must be in accordance with the foregoing list. The Local Committee shall select the classes, and specify them in the Report.

3. The Medals are granted for two years, and lapse if not awarded in those years.

4. No Society shall receive more than two Medals in any year.

5. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society **must be a member of the Highland and Agricultural Society of Scotland.**

6. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no provincial Show may be held in that district in the **three months** immediately **preceding** the date of the General Show. **In the event of a Show being held, the entire grant will be cancelled.**

7. The Money Premiums given in the District must be not less than £2 for each Medal claimed.

8. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.

9. There must not be fewer than three competitors in all the classes.

10. Regarding Reports and despatch of Medals, Rules 10 and 11, Section 1, will apply.

11. When a grant of Medals has expired, the Society cannot apply again for Medals for two years.

Grants in 1933.

2nd Year.

1. CUMBERNAULD AGRICULTURAL SOCIETY.
Convener—A. Elrick Gray, Easter Dullatur, Dullatur.
Secretary—John Longwill, District Council Offices, Cumbernauld.
Granted 1932. (2 Medals.)

2. MOULIN AGRICULTURAL ASSOCIATION.
Convener—John S. H. Brander, Westwinds, Pitlochry.
Secretary—Buckham W. Liddell, W.S., Pitlochry.
Granted 1932. (1 Medal.)

3. ROUSAY AGRICULTURAL SOCIETY.
Convener—R. S. Mainland, Westness, Rousay, Orkney.
Secretary—John Linklater, Westness Farm, Rousay, Orkney.
Granted 1932. (2 Medals.)

1st Year.

4. ABERDOUR AND NORTH EASTERN AGRICULTURAL ASSOCIATION.
Convener—William Simmers, Overton, Memsie, Fraserburgh.
Secretary—John Mowat, Mains of Forrest, Fraserburgh.
Granted 1933. (2 Medals.)

5. FYVIE HORTICULTURAL AND INDUSTRIAL ASSOCIATION.
Convener—George Morrison, Lawrence Cottage, Fyvie.
Secretary—Leonard Milne, Fyvie Station, Aberdeenshire.
Granted 1933. (2 Medals.)

6. EAST OF FIFE ENTIRE HORSE SOCIETY.
Convener—John Gray, Bonnyton, Stravithie.
Secretary—James Gray, Stravithie Mains, Stravithie.
Granted 1933. (2 Medals.)

7. SOUTH RONALDSHAY AND BURRAY AGRICULTURAL SOCIETY.
Convener—John Omand, Hall of Hoxa, South Ronaldshay.
Secretary—George Esson, St Margaret's Hope, Orkney.
Granted 1933. (2 Medals.)

8. BLACK ISLE FARMERS' SOCIETY.
Convener—D. M'Leman, Avoch.
Secretary—F. Scott, Rosenberg, Cromarty.
Granted 1933. (2 Medals.)

9. DENNY AND DUNIPACE AGRICULTURAL ASSOCIATION.
Convener—William Binnie, Braes Farm, Denny.
Secretary—John M'Millan, 37 Stirling Street, Denny.
Granted 1933. (2 Medals.)

4. SPECIAL GRANTS—1933.

(1) ANNUAL.

1. **THE AYRSHIRE AGRICULTURAL ASSOCIATION**, £20, to be competed for at the Dairy Produce Show at Kilmarnock.
   Chairman of Directors—Colonel W. T. R. Houldsworth of Kirkbride, Maybole.
   Secretary—James A. Paterson, 13 Alloway Street, Ayr.
   Granted 1872.

2. **THE BRITISH DAIRYMAIDS' ASSOCIATION.**
   Hon. President—Miss Mitchell of Langloes, Biggar.
   Hon. Secretary—Miss J. Macdonald, 16 Rutland Square, Edinburgh 1.
   1 Minor Gold Medal and 1 Medium Silver Medal for Champion Buttermaking Competitions.
   Granted 1908.

3. **THE NORTHERN COUNTIES ARTS AND CRAFTS SOCIETY**, £20.
   President—Miss Mary Mackintosh, Raigmore, Inverness.
   Joint-Secretaries—Mrs Mitford, Berryfield, Lentran, and Miss Ruth Mackintosh, Raigmore, Inverness.
   Granted 1922.

4. **THE NORTH OF SCOTLAND COLLEGE OF AGRICULTURE.**
   Secretary—A. A. Prosser, Crown Mansions, 41½ Union Street, Aberdeen.
   3 Silver Medals (1 Large, 1 Medium and 1 Minor)—1st, 2nd and 3rd Prizes respectively—for *Sir John Fleming Cup* Stackyard Competition.
   Granted 1925.

5. **THE SCOTTISH NATIONAL UNION OF ALLOTMENT HOLDERS.**
   Secretary and Treasurer—Archibald W. Fisher, Solicitor, 18 Hill Street, Edinburgh.
   £8 and 8 Medium Silver Medals for best Allotments.
   Granted 1927.

(2) IN ALTERNATE YEARS.—GRANTS IN 1933.

6. **ORKNEY AGRICULTURAL SOCIETY**, £3.
   Convener—J. G. S. Flett, Nistaben, Harray, Orkney.
   Joint-Secretaries—D. Flett and J. C. Croy, Junction Road, Kirkwall.
   Granted 1883.

7. **EAST MAINLAND AGRICULTURAL SOCIETY, ORKNEY**, £3.
   Convener—James G. Skea, Barns of Ayre, Deerness, Orkney.
   Secretary—Alfred C. Tait, Quoyburray, Tankerness, Orkney.
   Granted 1898.

8. **WEST MAINLAND AGRICULTURAL SOCIETY, ORKNEY**, £3.
   Convener—William Ritch, Kierfield, Sandwick, Orkney.
   Secretary—James Wood, Garson, Sandwick, Orkney.
   Granted 1900.

9. SANDAY AGRICULTURAL ASSOCIATION, ORKNEY, £3.
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Wallace, Pratsfauld, Sanday, Orkney.
Granted 1902.

10. YELL AGRICULTURAL SOCIETY, SHETLAND, £3.
Convener—T. R. Manson, Ladybank, Westsandwick, Lerwick.
Secretary—Robert Johnson, The Manse, Westsandwick, Lerwick.
Granted 1931.

(3) IN ALTERNATE YEARS.—GRANTS IN ABEYANCE, 1933.

11. ROUSAY AGRICULTURAL SOCIETY, ORKNEY, £3.
Convener—R. S. Mainland, Westness, Rousay, Orkney.
Secretary—John Linklater, Westness Farm, Rousay, Orkney.
Granted 1903.

12. SOUTH RONALDSHAY AND BURRAY AGRICULTURAL SOCIETY, ORKNEY, £3.
Convener—John Omand, Hall of Hoxa, South Ronaldshay, Orkney.
Secretary—George Esson, St Margaret's Hope, Orkney.
Granted 1904.

5. SCOTTISH WOMEN'S RURAL INSTITUTES.

REGULATIONS, 1933.

1. A sum not exceeding £150 in each year will be given in special Grants to Federations of Scottish Women's Rural Institutes. The amount of any one Grant shall not exceed £10 in any one year.

2. A Federation which has received a Grant for two consecutive years shall not be eligible to again apply until after the expiry of two years.

Grants in 1933.

2nd Year.

1. STIRLING AND WEST PERTH FEDERATION.
Convener—Mrs Macdiarmid, Oakbank, Kippen.
Hon. Secretary—Miss M. Y. Mackay, East Plean, Bannockburn.
Granted 1931. (Grant postponed for 1931.—Show at which Exhibition staged abandoned on account of Foot-and-Mouth Disease Order.)

2. ARRAN, ISLE OF, FEDERATION.
Convener—Mrs Stewart Orr, Corrie House, Corrie, Isle of Arran.
Secretary—Mrs Sillars, St Bride's, Lamlash.
Granted 1932.

3. Bute, Isle of, Federation.
Convener—Mrs Constable, The Foley, Rothesay.
Secretary—Miss M. Gray Buchanan, Ettrickdale, Port Bannatyne.
Granted 1932.

4. Fife Federation.
Convener—Mrs Marshall, Dunduff, Dunfermline.
Secretary—Miss A. G. Balfour, Balbirnie, Markinch.
Granted 1932.

5. Forfarshire Federation.
Convener—Mrs Babington, The Manse, Glamis.
Secretary—Miss M. C. M'Farlane, Mains of Careston, Brechin.
Granted 1932.

6. Roxburghshire Federation.
Convener—Lady Biddulph, The Pavilion, Melrose
Hon. Secretary—Mrs Jamieson, The Lodge, Langshaw, Galashiels.
Granted 1932.

1st Year.

7. Caithness Federation.
Convener—Mrs Bremner, Tofts, Freswick, Wick.
Secretary—Miss A. S. M'I. Bain, Bowermadden, Bower, Wick.
Granted 1933.

8. Dunbartonshire Federation.
Convener—Miss Eunice G. Murray, Moore Park, Cardross.
Secretary—Miss S. E. C. Lumsden, Duncryne, Gartocharn.
Granted 1933.

9. East Lothian Federation.
Convener—Mrs Skene-Tytler, Keith Marischal, Humbie.
Secretary—Miss J. N. Tweedie, Eweford, Dunbar.
Granted 1933.

10. Moray and Nairn Federation.
Convener—The Hon. Mrs Campbell, Lethen House, Nairn.
Secretary—Miss I. Brown, Dipple, Fochabers.
Granted 1933.

11. Orkney Federation.
Convener—Mrs Leask, 10 King Street, Kirkwall.
Secretary—Mrs Moar, Schoolhouse, Deerness, Orkney.
Granted 1933.

12. Peeblesshire Federation.
Convener—Mrs Thomson, Kaims, West Linton.
Secretary—Mrs Watson, Garvald, Dolphinton.
Granted 1933.

13. PERTHSHIRE AND KINROSS-SHIRE FEDERATION.
Convener—Mrs Haggart, Eilean Riabhach, Aberfeldy.
Secretary—Miss Ker, Tigh-na-crich, Lochearnhead, Perthshire.
Granted 1933.

14. SELKIRKSHIRE FEDERATION.
Convener—Mrs Meade, The Hangingshaw, Selkirk.
Secretary—Mrs Macgown, Fairholm, Ettrickbridge.
Granted 1933.

15. SUTHERLAND FEDERATION.
Convener—Mrs Serjeantson, Troughend, Brora.
Secretary—Mrs Grant, Pulrossie, Dornoch.
Granted 1933.

GROUP III.—COTTAGES AND GARDENS, &c.

The following Premiums are offered for Competition.
The Premiums are granted for two years.

1. PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1. Best kept Cottage	£1 0 0
Second best	0 10 0
2. Best kept Cottage Garden	1 0 0
Second best	0 10 0

Forms of application may be obtained from the Secretary, and should be completed and returned on or before 1st November next, in respect of a Grant commencing in the following year.

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It shall be left to the Committee in the District to fix two grades of Cottages, with maximum rents of £6 and £15 respectively, and to apply for £3 Grants in respect of each.

4. To warrant the award of full Premiums, there must not be fewer than three Competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before the 1st November next.*

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Grants in 1933.

2nd Year.

1. CERES FLOWER SHOW SOCIETY.
   President—Miss Mackenzie, Saughtree, Ceres, Cupar.
   Secretary—Mrs Howie, Main Street, Ceres, Cupar.
   Granted 1932.

1st Year.

2. FYVIE HORTICULTURAL AND INDUSTRIAL ASSOCIATION.
   Convener—George Morrison, Lawrence Cottage, Fyvie.
   Secretary—Leonard Milne, Fyvie Station, Aberdeenshire.
   Granted 1933.

3. GLAMIS HORTICULTURAL SOCIETY.
   Convener—Rev. M. Babington, The Manse, Glamis.
   Secretary—Miss M. Nicoll, Plans of Thornton, Glamis.
   Granted 1933.

4. DREGHORN HORTICULTURAL AND AGRICULTURAL SOCIETY.
   Convener—A. G. Howat, "Helena," Springside, Ayrshire.
   Secretary—Robert Gordon, Cherrybank Cottage, Dreghorn, Ayrshire.
   Granted 1933.

2. MEDALS FOR BEST KEPT COTTAGES AND GARDENS, GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

REGULATIONS.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections :—*

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)
(2) Best kept Garden. (One Medal only.)
(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)
(4) Best Pen of Poultry. (One Medal only.)
(5) Honey. (One Medal only.)

3. The annual value of each cottage, with the ground occupied in the parish by a Competitor, must not exceed £20. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Forms of Report of Competitions will be furnished to the Secretaries in the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Competition, and in no case later than 1*st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. If no Competition takes place in a District for two years the grant expires.

9. When a grant of Medals has expired, the District cannot apply again for aid for two years.

Grants in 1933.

2nd Year.

1. CERES FLOWER SHOW SOCIETY.
President—Miss Mackenzie, Saughtree, Ceres, Cupar.
Secretary—Mrs Howie, Main Street, Ceres, Cupar.
Granted 1932. (1 Medal.)

1st Year.

2. GLAMIS HORTICULTURAL SOCIETY.
Convener—Rev. M. Babington, The Manse, Glamis.
Secretary—Miss M. Nicoll, Plans of Thornton, Glamis.
Granted 1933. (2 Medals.)

3. DREGHORN HORTICULTURAL AND AGRICULTURAL SOCIETY.
Convener—A. G. Howat, "Helena," Springside, Ayrshire.
Secretary—Robert Gordon, Cherrybank Cottage, Dreghorn, Ayrshire.
Granted 1933. (1 Medal.)

GROUP IV.—PLOUGHING, HOEING, AND LONG SERVICE.

1. MEDALS FOR PLOUGHING COMPETITIONS.

The Ploughing Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the Association at in the county of on the when ploughs competed; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded as follows:—

[*Here enumerate the names and designations of successful Competitors.*]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.
2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.
3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.
4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.
5. A Member can report only one Match; and a Ploughman cannot carry more than three Medals in the same season.
6. To warrant the grant of the Medal, there must have been 12 Ploughs in actual competition for the medal (*i.e., in the particular class for which the medal was offered*) and not less than £3 awarded in Prizes by the Local Society. The Medal to be given to the winner of the first prize.
7. The Local Society or Ploughing Association shall decide what class of ploughs shall compete for the Medal, and if so agreed, may offer it for competition to the class of plough most generally in use in the district.

8. The Local Society or Committee may, if they desire, arrange to let each Ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall Ploughmen receive any other assistance, and their work must not be set up or touched by others. Attention should be given to the firmness and sufficiency of the work below, more than to its neatness above the surface.

9. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than fourteen hours per imperial acre on light land, and eighteen hours on heavy or stony land.

NOTE.—The attention of the Directors of the Society has frequently been drawn to certain irregularities which have occurred in connection with the conduct of Ploughing Matches and the completion of the Reports thereon. Complaints have been made (*a*) that the allotted amount of ground has not been ploughed, within the specified time, by the competitor awarded the first prize; (*b*) that the Report sent to this Society has been signed by a Member of the Society who was not present at the Match. It has to be pointed out that any infringement of the above Rules by a Local Society or Ploughing Association will render that Society or Association liable, at the discretion of the Board of Directors, to be debarred from receiving the Society's Medals in future.

2. MEDALS FOR HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report in the following terms on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Hand-picking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

3. CERTIFICATES AND MEDALS FOR LONG SERVICE.

Certificates and Silver Medals for long service will be awarded by the Society to farm servants, male or female, having an approved service in Scotland of not less than thirty years—(*a*) with one employer on the same or different holdings ; (*b*) on the same holding with different employers.

Special Certificates and Gold Medals are also awarded to farm servants, male or female, having an approved service in Scotland of not less than forty-five years, on similar conditions of employment as the above.

These Certificates and Medals will be issued as applications are received.

Forms to be obtained from the Secretary, 8 Eglinton Crescent, Edinburgh.

War Service to count towards the time required for qualification, where farm servants have returned to same service or employment with same farmer or his family.

Estate workers, such as Foresters, Carters, Grooms, &c., are not eligible. The award is strictly confined to **Farm** workers, such as Ploughmen, Shepherds, &c.

NOTE.—From 13th to 22nd June all communications for the Secretary should be addressed to him at the Secretary's Office, Showyard, Dundee.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK, IMPLEMENTS AND MACHINERY

DUNDEE

20TH, 21ST, 22ND, AND 23RD JUNE 1933.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 3rd April.

NEW IMPLEMENTS—Monday, 3rd April.

HORTICULTURAL SECTION—Saturday, 22nd April.

CATTLE, HORSES, SHEEP, GOATS, AND PIGS—Wednesday, 3rd May.
(*Separate Form for* EACH *Entry.*)

DRAUGHT GELDINGS IN HARNESS—Tuesday, 13th June.

POULTRY, DAIRY PRODUCE, EGGS, RURAL INDUSTRIES, AND HORSE-SHOEING AND SHOE-MAKING—Wednesday, 3rd May.

RABBITS, HONEY, AND STOCK JUDGING COMPETITION—Thursday, 18th May.

BUTTERMAKING COMPETITIONS—Thursday, 25th May.

President of the Society.

HIS ROYAL HIGHNESS THE DUKE OF YORK, K.G., K.T., etc.

Chairman of the Board of Directors.

ALEXANDER MURDOCH, EAST HALLSIDE, CAMBUSLANG, LANARKSHIRE.

Convener of the Local Committee.

HIS GRACE THE DUKE OF ATHOLL, K.T., G.C.V.O., etc.

The District connected with the Show comprises the Counties of Angus (Western District), Fife, Kinross, and Perth (Perth Show District).

CONTENTS

PAGE
GENERAL CONDITIONS . 91
IMPLEMENTS AND OTHER ARTICLES 100
HORTICULTURAL SECTION 103
NEW IMPLEMENTS . . 104

CLASSES.

CATTLE—

Shorthorn . . . 109
Aberdeen-Angus . . 111
Galloway . . . 113
Belted Galloway . . 114
Highland 115
Ayrshire 116
British Friesian . . 118
Red Poll 119
Fat Cattle . . . 120
Dairy Cows . . . 120
Edinburgh Cup . . 121

HORSES—

Clydesdale Males . . 122
Clydesdale Geldings . . 123
Clydesdale Females . . 124
Shire 124
Suffolk 125
Hunter 125
Highland and Western Island Ponies . . 126
Shetland Ponies . . 127
Saddle Classes . . . 128
Horses in Harness . . 128
Draught Geldings in Harness 129
Jumping Competitions . 130

CLASSES—*Continued.*

SHEEP—

PAGE
Blackface . . . 131
Cheviot 132
Border Leicester . . 133
Half-Bred . . . 134
Oxford Down . . . 134
Suffolk 135
Shropshire . . . 135
Dorset Horn . . . 136
Fat Sheep . . . 136

GOATS 137

PIGS—

Large White . . . 139
Large Black . . . 140
EXTRA STOCK . . . 140
POULTRY 141
DAIRY PRODUCE . . . 143
EGGS 143
RABBITS 144
HONEY, &C. . . . 145
BUTTERMAKING COMPETITIONS 147
RURAL INDUSTRIES . . 148
HORSE-SHOEING COMPETITION 150
SHOE-MAKING COMPETITION . 151
LIVE STOCK JUDGING COMPETITION 152

ABSTRACT OF PREMIUMS . . 153

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of Great Britain, Northern Ireland, and Irish Free State.

Entries.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 3rd April, for Implements, New Implements, and other Articles; Saturday, 22nd April, Horticultural Section; Wednesday, 3rd May, for Stock, Poultry, Dairy Produce, Eggs, Rural Industries, and Horse-shoeing and Shoe-making; Thursday, 18th May, for Rabbits, Honey, and Stock Judging Competition; Thursday, 25th May, for Buttermaking Competitions; Tuesday, 13th June, Draught Geldings in Harness.* Printed forms of Entry will be issued on application to the Secretary, No. 8 Eglinton Crescent, Edinburgh 12. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show.

Substitution of Entry in same Class.

Between 3rd May and 25th May an Exhibitor who has made, in due time, an entry of Horses, Cattle, Sheep, Goats, or Pigs, in a particular class, will be permitted to substitute for it an entry of another animal in the *same class* on payment of a fee of Five Shillings each entry.

Licenses for moving Stock.

3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Ministry of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences application should be made to the Chief Constable, Dundee.

Diseased Animals.

4. Animals suffering from any form of infectious or contagious disease—including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed.

Horses suffering from cold.

The Steward of Horses shall have power to require that any animal showing symptoms of cold be examined by the Veterinary Surgeon, and, if found to be so suffering, the animal shall be isolated or excluded from the Showyard.

Fees to accompany Entries.

5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees.

Particulars of Entries.

6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any

time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.

Name of Breeder. 7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown.

No Substitution of Animals. 8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place, except as provided in Rule 2.

One Class only. 9. For Prizes given by the Society, no animal shall be allowed to enter in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description ; but this Rule does not apply to the Jumping Classes.

Ownership. 10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered.

Responsibility for Entries. 11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry fee paid for an animal entered in a class for which it is not eligible is not returnable.

Cancelling of Entries. 12. In the event of the entries in any section of Cattle, Horses, Sheep, Goats, or Pigs being less in number than an average of three per class, or the number of different Exhibitors in the section being less than three, the classes for that section shall be cancelled automatically for the year and the entry fees returned.

Society not liable. 13. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, &c., Implements, or other articles may sustain at the Show, or in transit.

Disqualified Exhibitors. 14. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices.

Animal Disqualified. 15. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity.

Tampering with Animals. 16. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit.

Blindfolding Horses. 17. Horses shall not be blindfolded while being shown in the Ring.

Rejecting Entries. 18. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry.

Control of Exhibits.

19. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary.

Improper Conduct.

20. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the Judging Rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules.

Subject to Orders.

21. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives.

Power of Officials.

The Stewards and other officials have power to enforce the Regulations of the Society in their different departments.

Protests.

22. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors, and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received.

Penalties for Offences.

23. The violation of any one of the Regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all Premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine.

Final Authority.

24. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law.

Intimating Decisions.

25. All decisions under these Rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies in the United Kingdom, and may be published in the Annual Reports

of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

Former Winners.

26. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

Herd-books.

27. Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Highland, British Friesian, and Red Poll cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein. Dun Galloways entered in the ordinary Galloway classes must be registered in, or eligible for entry in, the Galloway Cattle Society's herd-book.

Height of Horses.

28. All Horses or Ponies entered in classes in which a particular height is stated shall, before being judged, be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted. In the case of Highland and Western Island Ponies, these may be measured without shoes, the height limit in such cases being reduced by quarter of an inch.

Weight of Shoes.

29. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the second morning of the Show and see that the following Rules as to the weight of shoes are attended to—viz., (*a*) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (*b*) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1½ lb. in weight.

Overfeeding.

30. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires.

31. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

Calving Cows.

32. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire, British Friesian, and Red Poll) must have had a live or full-time calf within nine months previous to the Show, and when exhibited must be in milk. Cows of the Ayrshire, British Friesian, and Red Poll breeds must have had a live or full-time calf within fifteen months previous to the Show. *Animals of any age that have had a calf must be shown as Cows.*

In-calf Heifers.

33. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, Galloway, Belted Galloway, Ayrshire, British Friesian, and Red Poll breeds, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show.

Mares. 34. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must (except where otherwise provided) have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Draught Yeld Mares must produce a foal not later than 1st August of the year following the year of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show.

Sows. 35. All Sows born in or before 1931 must have produced a litter of pigs in the year of the Show before the opening day. Sows born between 1st January and 1st September 1932 must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case.

Calves and Foals. Calving, Farrowing, and Foaling Certificates. 36. With reference to Regulation 33, birth of a live or full-time calf must be certified; and in regard to Regulation 34, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a full-time calf or foal within the periods stated in Regulations 33 and 34. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, foaling certificates within thirteen months, and farrowing certificates within four months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the Prize will therefore pass to the animal next in order of merit or be forfeited.

Special Prizes. 37. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving, foaling, and farrowing.

Payment of Prizes. 38. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate.

Veterinary Examination of Stallions and Colts. 39. No Stallion or entire Colt, two years old or upwards, shall be allowed to compete for any of the Society's Prizes unless it has previously been licensed for stud purposes during the current year by the Department of Agriculture for Scotland, the Ministry of Agriculture and Fisheries, or the Irish Department of Agriculture.

Soundness of other Horses. Accommodation for examination. 40. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received.

Ewes. 41. Every Ewe must have given birth to and reared a lamb in the year of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot.

Milking. 42. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him. Animals arriving after six o'clock will be milked dry at the time of arrival.

All animals in milk, in the Ayrshire Cattle Classes and Dairy Cow Class, must be milked out in the ring before the awards are made.

Clipping. 43. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.

No Blackface Sheep shall be eligible (except where otherwise provided) which has not been clipt bare on or after the 1st April of the year of the Show.

Colouring, &c., of Sheep and Pigs. 44. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border Leicester, and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face, or legs have been dealt with by the use of foreign substances other than ordinary dips or bloom dips.

The use of artificial whitening or powder on Large White and Middle White Pigs is prohibited, and the Judge is empowered to disqualify any pig so whitened or powdered.

Flock Books. 45. All Oxford Down and Suffolk Sheep shown must be entered or eligible for entry in the Oxford Down and Suffolk Flock Books respectively.

Poultry. 46. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Railway Passes. 47. Railway Certificates for Stock, for both outward and return journeys, will be issued to Exhibitors before the Show along with their Tickets of Admission (see page 106).

Admission of Stock. 48. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this Premium List. Judging begins at 9.30 A.M. on Tuesday. Poultry and Stock will be exhibited on Tuesday, Wednesday, Thursday, and Friday. Any animals selected by the Stewards may be required to take part in the Stock Judging Competition on the Thursday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.

Parades. 49. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Females of the Highland Cattle breed born in or after 1927 must be paraded; those born before 1927 will be paraded at the option of the Exhibitor. In Parade, Horses must be ridden or led as provided in their respective classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *forty-five minutes before the hour of Parade,* and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors. 50. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

Moving from stalls. 51. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary.

Washing Cattle. 52. Cattle shall not be taken out of their stalls to be washed after the Judging has commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s.

Soaping prohibited. Colouring matter. 53. Soap or other adhesive material must not be used in dressing cattle or horses. The use of blacking or other colouring matter on cattle is prohibited. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified.

Loose-boxes and Stalls. 54. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Stalls for nurse cows charged at ordinary rates. Boxes (floored) for attendants on Cattle, Horses, Sheep, Goats, and Pigs will be provided at a charge of 40s. for each box for members; 50s. for non-members. (See Rule 79.)

Floored Boxes and Stalls for Animals. 55. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Society's Showyard Erector, Mr John Reid, Showyard, ten days before the Show opens. (For charges, see Rule 78.)

Securing Cattle. 56. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls.

Concealing Animals. 57. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department.

Fodder. 58. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 1.30 P.M. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not *grass, tares, hay, or straw.* Coops, food, and attendance for Poultry and Rabbits will be provided by the Society.

Feeding appliances. 59. Servants in charge of Stock must bring their own buckets or pails and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided.

Sawdust. 60. Sawdust must not be used as bedding for Stock.

Water. 61. As the command of water in the Yard is limited, it is particularly requested that waste be avoided.

Lights and Smoking. Closing of Gates. 62. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. The gates will be closed at midnight, and no person shall be allowed to enter or leave the Yard between that time and 5 A.M. without a special permit.

Removal of Stock. 63. Stock or Poultry cannot be removed from the Yard till 5 P.M. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary.

Withdrawal of horses overnight. 64. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 P.M. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday.

Order in removal. 65. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed.

Penning and removing Poultry. 66. Poultry may be penned before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

Closing of Poultry Shed to Public. 67. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 P.M. to remove the birds.

JUDGING STOCK AND POULTRY.

Opening Gates. 68. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging. 69. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment thereon shall be permitted.

Insufficient merit. 70. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.

Commendations. 71. In addition to the Premiums, the Judges may award **one** Very Highly Commended, **one** Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Ayrshire and British Friesian Cows and Heifers. 72. Ayrshire and British Friesian Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire and British Friesian Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk. Heifers entered in a Milk Class, which have not calved before the Show, will be judged along with Heifers in Calf.

Attending Members' duties.

73. Attending Members will accompany the Judge of each section. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

74. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or Attending Member in any class in which he is competing.

DAIRY PRODUCE.

75. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

Placing and removing Dairy Produce.

76. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than **one** lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT.

Stall Rent.

77. The Stall Rents (which include Entry Fees), as stated opposite the individual classes in this List, shall be paid by Exhibitors when making their entries. The Secretary is instructed to return entries sent without the necessary fees.

FLOORED BOXES AND STALLS.

Floored Stalls for Animals.

78. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the Society's Showyard Erector (Mr John Reid, Showyard, Dundee), to whom the following charges for flooring have to be paid: Horses, 30s. each; Ponies, Cattle, Sheep, Goats, and Pigs, 20s. each.

ACCOMMODATION FOR ATTENDANTS.

Accommodation for Attendants.

79. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 40s. per box for members and 50s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and in the case of Belted Galloway, Ayrshire, British Friesian, and Red Poll Cattle and all Horses, Exhibitors must state the animal next to which the attendant's box is to be placed. Attendants' boxes in the other Cattle Sections and the Sheep, Goat, and Pig Sections will be erected at the end of each run of shedding. Attendants' boxes cannot be guaranteed after the closing date.

IMPLEMENTS AND OTHER ARTICLES.

Admission of Goods.

80. Implements will be received in the Yard from Tuesday, 13th June, till 5 o'clock on the afternoon of Monday, 19th June. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated.

Premiums.

81. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind.

Refusing Entries.

82. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse entries from dealers in articles not deemed worthy of Exhibition.

Local Operatives.

83. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 15s. for space 10 feet wide and 20 feet deep.

Articles not entered.

84. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this Rule are moreover liable to a fine of £1.

Selling by auction and noisy behaviour forbidden.

85. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits.

Removing Exhibits.

86. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its Stand, or the Stand dismantled, till the termination of the Show, at 5 P.M. on Friday.

Restoring Turf.

87. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor.

Arranging Exhibits.

88. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, the first day of the

Show, and to the satisfaction of the Stewards in charge of the Implement Yard. Exhibitors are prohibited from sub-letting space allotted to them, and from displaying the name of any other firm on their Stand. All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas. *Signs.*

Handbills.

89. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

Sweeping Stands, &c.

90. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel.

91. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5.

Steam Engines.

92. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods into or out of the Showyard or from one place to another therein.

Traction Engines.

93. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their Stands till 6 P.M. on Friday.

Consigning Implements.

94. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's Stand.

95. The carriage of all Implements must be prepaid.

Photographing in Showyard.

96. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 20s. It admits the holder to the Show when open to the public, and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. It does not entitle the holder to sell photographs in the Showyard. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades.

Offices.

97. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £5 to Members and £7 to Non-Members.

Exhibitors' and Attendants' Tickets.

98. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm. All Exhibitors will receive, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than three for each ten feet of frontage, and in no case exceeding a maximum of twenty for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. *No tickets will be issued without an Order.*

Tickets to be filled up and signed.

99. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulations will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each Ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name

Tickets not Transferable. Improper use of Tickets.

on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitor's attendants are strictly cautioned not to lend or transfer their Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Admission of Supplies for Stand-holders.

100. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow), with supplies, admitted by Special Ticket; price for one admission, 2s., for six admissions, 10s. Motor or horse vehicle and driver, with supplies, admitted by Special Ticket; price for one admission, 2s. 6d., for six admissions, 12s. These Special Tickets may be had from the Secretary. Vehicles, with supplies, will be admitted to the Showyard only between *Seven o'clock and Nine o'clock*, on each morning of the Show, except by written permit from the Secretary.

Vehicles, with a carrying capacity of more than 2 tons, will not be admitted to the Showyard at any time, except by special permit from the Secretary.

Cycles.

101. The riding of Cycles in the Showyard is prohibited.

Accidents.

102. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Alcoholic Drinks.

103. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited. With a view to the enforcement of this rule the Society reserves the right of unrestricted access, by its authorised representative, to all Exhibitors' Stands during the Show.

Gas and Electric Power.

104. Exhibitors desiring the use of gas in the Showyard should apply to the Manager, Gas Works, Dundee, and those desiring electric power should apply to the Manager, Electric Supply Works, Dundee, not later than 13th May.

Space for Stands.

105. * Ground to be taken in spaces of 10 feet frontage by 20 feet deep, and in Motion Yard in spaces of 10 feet frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open.

Exhibits not in Motion.

Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 600 square feet—may be occupied in the Motion Yard by exhibits not in motion.

Maximum Space.

106. The maximum extent of space which any one Exhibitor may apply for shall be 60 feet of frontage in the Motion Yard, and 120 feet of frontage in the other Sections.

Allocation of space.

107. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

Fitting up of Stands.

108. Exhibitors requiring work executed in connection with the fitting up of Stands allotted to them must employ the Society's Showyard Erector—Mr John Reid, 55 Blenheim Place, Aberdeen. The execution of orders received later than one week before the opening of the Show cannot be guaranteed.

---

* Special provision may be made for Exhibitors of both machinery in motion and implements and machinery not in motion on application being made to the Secretary.

109. Rates for space, payable by Exhibitors when making their Entries :—

	Members.	Non-Members.
1. Open ground without Shedding, 20 ft. deep, per 10 ft. frontage	£1 10 0	£2 5 0
2. Special open ground, without Shedding, 20 ft. deep, per 10 ft. frontage	2 10 0	3 5 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft. frontage	1 10 0	2 5 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft. frontage	2 10 0	3 5 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft. frontage	3 0 0	4 0 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft. frontage	4 10 0	5 10 0
7. †Motion Yard, without Shedding, 50 ft. deep, per 10 ft. frontage	3 0 0	4 15 0
8. †Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. *open in front*), 11 ft. to eave, per 10 ft. frontage	4 10 0	6 0 0
9. Special Section for Motor Vehicles, 30 ft. deep (20 ft. covered and 10 ft. *open in front*), 11 ft. to eave, per 10 ft. frontage	4 10 0	5 10 0
10. Covered Booths for offices, 9 ft. by 9 ft., each	5 0 0	7 0 0
11. Press offices, 9 ft. by 9 ft., each £4.		

† See Rules 105 and 106.

Tents and marquees not allowed in the Showyard. All internal fittings to be executed by the Exhibitor at his own expense. The Society's Showyard Erector must be employed. See Rule 108.

HORTICULTURAL SECTION.

See also Regulations 80 to 108.

Judges: N. F. Barnes—Floral Exhibits, Flowering Plants, Vegetables.
L. B. Stewart—Formal or Rock Gardens, Rock Plants, and Alpines.

1. Exhibits in this section may comprise collections of flowers, plants, shrubs, or vegetables, formal gardens, and rock gardens.

2. The Society will award a Gold Medal for the best exhibit in each of the following sections : (*a*) floral, (*b*) formal or rock gardens, (*c*) flowering plants, (*d*) rock plants and alpines, and (*e*) vegetables. Silver Medals, not exceeding six in number, will be offered for other exhibits of outstanding merit.

3. Application for space, for which no stand rent or entry fee is payable, must be made on special entry forms, to be obtained from the Secretary and lodged on or before 22nd April. Entry forms must give full details of each exhibit and the amount of space required. Space, which may be either covered or open, will be allocated in sections of 10 feet each, with a depth of 20 feet, and a maximum of 60 feet frontage for one exhibitor. For space without shedding special consideration will be given to applications from exhibitors desiring a greater depth than 20 feet. Staging will be provided free of charge.

4. The Society reserves the right to refuse any application for space, or to limit the amount of space to be allocated to any exhibitor.

5. Each exhibitor shall receive one exhibitor's ticket and two attendants' tickets for each 10 feet of frontage. Additional attendants' tickets, not more than three for each 10 feet of frontage, and in no case exceeding a maximum of twenty, may be purchased at a price of 5s. each. *No tickets will be issued without an order.*

6. All exhibits must be in position not later than 5 P.M. on Monday, 19th June, with the exception of cut flowers, which may be staged

up till 8 A.M. on Tuesday, 20th June. Judging will commence at 9.30 A.M. on Tuesday. Stands must remain open until the Show closes on each of the four days.

NEW IMPLEMENTS.

1. Entries of New Implements for the Society's Silver Medal must be made on or before 3rd April. Entries shall be made on a special form obtainable from the Secretary, and must define clearly the exact nature of the novelty which qualifies such implement to be entered for a Medal. Unless the "New Implement" be properly described in the specification, and particulars of its novelty are given at the time of making the entry, it will not be accepted.

2. For each entry of a "New Implement," a non-returnable Entry Fee of £1 will be charged.

3. In cases of sufficient merit, the Judges will recommend the award of the Society's Silver Medal to New Implements for agricultural or estate purposes, or to new improvements in such implements.

4. The Society does not bind itself to try in the field every "New Implement" entered for a Silver Medal, but in general a practical trial will be required before an award is made. The Judges shall report to the Directors those cases in which they consider a practical trial necessary.

5. Where intimation is received by the Secretary, not later than the 24th April, that a "New Implement" is ready for trial, the Directors may arrange for a practical trial before the Show at a place and date to be decided upon. In other cases the practical trial of New Implements will take place after the Show.

6. Any Exhibitor who expresses a wish to do so can, with the sanction of the Steward of Implements. at his own expense take his New Implement out of the Showyard during the Show week and put it to work, and, if within a reasonable distance, the Judges will, if they deem it necessary, inspect it at work and decide if it is worthy of a Silver Medal.

7. No Silver Medals will be awarded to, nor can any entry as New Implements be accepted of, machines of any class for which competitive trials have been announced by the Society as about to take place.

8. The Judges of New Implements will commence their inspection at 2.30 P.M. on Monday, 19th June, and will take in rotation the stands of the Exhibitors who have entered New Implements for the Society's Silver Medals. Each Exhibitor, or his representative, will be expected to be at the stand to explain the working of the Implement to the Judges. If the exhibit be not ready and in working order by the time the Judges make their inspection, it is liable to be struck off the list.

9. All publications by Exhibitors of the award of the Society's Silver Medals must state the year of the award, and must specify the exact nature of the "New Implement," of the improvement, or of the attachment to an Implement, for which the Silver Medal has been awarded.

10. On the recommendation of the Judges, with the approval of the Directors, any New Implement of merit, which cannot be sufficiently tried, or which is capable of further development, may be entered and exhibited as a "New Implement" at the succeeding Show of the Society.

11. The Judges' decision, when duly accepted and recorded, will in all cases be final.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary up to opening day of Show. Thereafter tickets are sold only in the Showyard at the Booking-office behind the Grand Stand.

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be —**Tuesday,** from 8 A.M. till 5 P.M., 7s. 6d. **Wednesday,** from 8 A.M. till 5 P.M., 5s.; from 5 P.M. to 8 P.M., 2s. 6d. **Thursday,** from 8 A.M. till 5 P.M., 2s. 6d.; from 5 P.M. till 8 P.M., 1s. **Friday,** from 8 A.M. till 5 P.M., 1s.

On Thursday and Friday children under twelve years of age admitted at 6d.

No Pass-out Checks given, and no re-admission without payment.

Season Tickets—12s. 6d. each (children under 12 years of age, 5s. each)—on application to Secretary. On the days of the Show, Season Tickets are sold only at the Entrance Gates.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge,*" which is strictly not transferable, Members of the Society are admitted free to the Showyard. Badges will be sent to all Members residing in Great Britain, Northern Ireland, and Irish Free State, whose addresses are known, and on no account will duplicates be issued. All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, Dairy Produce, &c. (not Members), whose Entry Fees amount to not less than 12s. 6d.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

VARIOUS.

Exhibitors may display their own Placards *inside and in front of* their stands; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 8 Eglinton Crescent, Edinburgh 12.

All Communications should be addressed to the Secretary of the Highland and Agricultural Society of Scotland, No. 8 *Eglinton Crescent, Edinburgh* 12. *From* 13*th to* 22*nd June, to the Secretary's Office, Showyard, Dundee.*

Address for Telegrams—"SOCIETY," EDINBURGH.

Telephone No.—EDINBURGH, 23655.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 30th May. All applications for horse-boxes and trucks, and for information as to train arrangements, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are indicated *below, but Exhibitors are recommended to apply to the respective Companies for* full particulars :—

1. Live Stock, Agricultural Machines, Implements, and other exhibits *to* the Show to be charged ordinary rates.

2. Live Stock, Agricultural Machines, Implements, and other exhibits *from* the Show, if sold, to be charged ordinary rates.

3. Live Stock from the Show, if unsold, and returned not later than the second day after the closing day of the Show (excluding Sunday), to be carried at half rates back to the Station whence the animals were sent, at owner's risk, on surrender of a Certificate from the Exhibitor, provided in accordance with the Railway Companies' requirements, and signed by the Secretary, to the effect that they are really unsold ; failing surrender of such Certificate, ordinary rates will be charged. The reduction to half rates is to be allowed only when the Stock are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the Stock at half rates by a different route. Minimum charge for Stock returning at half rates to be one-half the ordinary minimum.

4. Live Poultry from the Show, *if unsold,* to be carried by Passenger Train at half rates back to the Station from which sent, at O.R., on surrender of an agreed Certificate signed by the Secretary of the Show to the effect that the Poultry are unsold and remain the property of the Exhibitor. No Certificate will be required for such traffic, which is intended by the owner to be returned from the Show to the original sending Stations by the same route as originally forwarded and the charges prepaid for both the outward and return journeys. (Poultry to be charged ordinary rates both ways when conveyed by Goods Train.)

Poultry are only charged at the half rate when returned not later than the second day after the closing of the Show (Sunday being treated as a *dies non*).

5. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

6. Provender conveyed to and from Agricultural Shows with Live Stock will be charged at the applicable rates, subject to a free weight allowance, viz.—

Cattle	per animal,	56 lb.
Horses	„	56 „
Sheep, goats, lambs, pigs, and calves .	„	28 „

7. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be PREPAID ; and the carriage on all traffic *returned from the Show by Passenger Train Service must be PREPAID.*

The carriage charges on Live Stock conveyed in special vehicles by Passenger Train and intended to be returned to the original sending Station may also be prepaid for the return journey at the original sending Station if the owner so desires.

The Railway Charge on all exhibits which are conveyed by Passenger Train in the Guard's Van and intended to be returned from the Show direct to the original sending Station by the same route must be PREPAID, for both the outward and return journeys, at the original sending Station. The agreed form of address label for Poultry, Rabbits, Dairy Produce, Eggs, Bee Appliances, and Rural Industries exhibits, which will be supplied through the Secretary of the Society, must be used in such cases.

8. Attendants in charge of Live Stock are conveyed free in the cases shown below, when certified by the owners to be *bona fide* in charge of such Live Stock :—

In Horse-Boxes.—Horses and Cattle : One man for each consignment, except where the consignment requires more than one vehicle, when one man to each vehicle may be sent free ; but where two or three Horses or Cattle forming one consignment are sent in the same Horse-box and a man is required to travel with each animal, a man for each animal may be conveyed free, provided each animal is charged for separately.

In Horse-Boxes.—Small animals : One man to each vehicle.

In specially constructed Cattle Trucks.—Cattle or other animals ; One man to each vehicle.

9. Agricultural Machines, Implements and other Exhibits from the Show, *if unsold*, to be conveyed at half rates back to the Station whence they were sent, at Owner's risk, on production of a Certificate from the Exhibitor (provided and signed by the Show Secretary) to the effect that they are unsold ; failing production of such Certificate, ordinary rates must be charged. The reduction to half rates is to be allowed only when the articles are returned by the same route as that by which they were conveyed to the Show, but it shall be in the option of the Railway Company or Companies to return the articles at half rates by a different route. This applies only to Goods Train Traffic.

10. Unsold articles, previously carried by railway, transferred from one Show to another, or exhibited at several Shows consecutively, and returned to the Station from whence originally sent, will be conveyed at half rates at Owner's risk, on production of a Certificate from the Exhibitor (provided and signed by the Show Secretary) to the effect that they are unsold ; failing production of such Certificate, ordinary rates will be charged. This applies only to Goods Train Traffic.

11. The ordinary rates charged for carriage do not in any case include delivery *to*, or collection *from*, the Showground.

12. Agricultural Societies' Show Plant must be charged at Class 10 rates, Station to Station.

13. Tents, Canvas, Show Stands, and other articles not for exhibition—

(*a*) When the property of Exhibitors, to be charged half the ordinary rate at Owner's risk from Show to Show, and on return from the Show to the Station from whence originally despatched.

(*b*) When not the property of Exhibitors, to be charged the ordinary rates both going to and returning from Show.

14. Carriages and other Road Vehicles are only conveyed by Passenger Train when this can be conveniently done.

DELIVERY AND COLLECTION CHARGES.

Cartage Charges to be paid by the Exhibitor for the Delivery or Collection of traffic between the Railway Station at Dundee and the Showground of the Highland and Agricultural Society's Show at Dundee on 20th, 21st, 22nd, and 23rd June.

General traffic	5s. per ton.
Minimum charge per consignment	2s. 6d.
Implements and Machinery (Agricultural), not exceeding 1 ton each	5s. per ton.
Minimum charge per delivery	2s. 6d.
Implements and Machinery (Agricultural) on their own wheels (specially hauled), not exceeding 1 ton	7s. 6d. each.
When hauled on their own wheels behind a Railway Company's lorry, loaded or partly loaded with goods, actual weight at	5s. per ton.
Single articles, exceeding 1 ton but not exceeding 3 tons	8s. per, ton.
Single articles, exceeding 3 tons but not exceeding 5 tons	9s. 6d. per ton
Single articles, exceeding 5 tons, by special arrangement only, but no less charge than	11s. 9d. per ton.
Loaded vans on their own wheels exceeding 1 ton but not exceeding 3 tons	8s. per ton.
Loaded vans on their own wheels exceeding 3 tons but not exceeding 5 tons	9s. 6d. per ton.
Loaded vans on their own wheels exceeding 5 tons, by special arrangement only, but no less charge than	11s. 9d. per ton.
Rustic Houses, by special arrangement only, but no less charge than	14s. per load.
Carriages, on their own wheels	6s. each.
Carriages, if carried on Railway Company's lorries	7s. 6d. per ton.
Minimum charge per consignment	7s. 6d.
Cattle, in floats	4s. per head.
Minimum charge for each float	7s.
Sheep, Goats, and Pigs, in floats	1s. 6d. per head.
Minimum charge for each float	7s.
Pigs, in crates	3s. per crate.
Minimum charge per load	6s.
Ordinary Parcels by passenger train	6d. each.
Miscellaneous passenger train traffic, including packages of plants and flowers carried at O.R. rates S. to S.	9d. per cwt.
Minimum charge per consignment	1s. 6d.
*Poultry, in crates or hampers	9d. per crate or hamper.
*Rabbits, in crates, hampers, &c.	
Cartage from point to point inside the Showground	3s. per hour.
Minimum charge	3s.

* **Poultry and Rabbit exhibits only will be conveyed at the Society's expense from the Railway Station to the Showyard and back, but no exhibit subject to railway charges will be received by the Society. All other delivery charges must be paid by the Exhibitor.**

THE PRESIDENT'S CHAMPION MEDALS

To commemorate the Presidency of His Royal Highness the Duke of York, the Society offers a Champion Silver Medal for the *best Animal* in each of the following sections:—

1. **Shorthorn.**
2. **Aberdeen-Angus.**
3. **Galloway.**
4. **Belted Galloway.**
5. **Highland.**
6. **Ayrshire.**
7. **British Friesian.**
8. **Red Poll.**
9. **Fat Cattle.**
10. **Dairy Cow.**
11. **Clydesdale Stallion or Colt.**
12. Clydesdale Gelding.
13. Clydesdale Mare or Filly.
14. Shire.
15. Suffolk.
16. Hunter.
17. Highland or Western Island Pony.
18. Shetland Pony.
19. Horse in Harness.
20. Blackface Sheep.
21. Cheviot.
22. Border Leicester.
23. Half-Bred.
24. Oxford Down.
25. Suffolk.
26. Shropshire.
27. Dorset Horn.
28. Fat Sheep.
29. Goat.
30. Large White Pig.
31. Large Black.

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.' At this Show no animal can be awarded more than one of these Medals.*

*CATTLE

SHORTHORN

Judges: John Barnes; Charles Crombie

Duke of York Champion Silver Medal for best Shorthorn Animal

ENTRY FEES *Members*	*ENTRY FEES* *Non-Members*	*CLASS*		*PREMIUMS* *First*	*PREMIUMS* *Second*	*PREMIUMS* *Third*	*PREMIUMS* *Fourth*
				£	£	£	£
25/-	45/-	1	**Bull** born before 1st December 1930 . .	15	10	5	3
25/-	45/-	2	**Bull** born on or after 1st December 1930 and before 1st April 1931	15	10	5	3
25/-	45/-	3	**Bull** born on or after 1st April 1931 and before 1st December 1931	12	8	4	2
25/-	45/-	4	**Bull** born on or after 1st December 1931 and before 1st April 1932	12	8	4	2
25/-	45/-	5	**Bull** born on or after 1st April 1932. . .	10	6	4	2
25/-	45/-	6	**Cow** in Milk, born before 1st December 1929 .	12	8	4	2
25/-	45/-	7	**Cow** in Milk, born on or after 1st December 1929 and before 1st December 1930 . . .	10	5	3	2
25/-	45/-	8	**Cow** or **Heifer** born on or after 1st December 1930 and before 1st December 1931 . . .	10	5	3	2
25/-	45/-	9	**Heifer** born on or after 1st December 1931 and before 1st April 1932	10	5	3	2
25/-	45/-	10	**Heifer** born on or after 1st April 1932 . .	10	5	3	2

---

* See Rules 32 and 33.

ENTRY FEES		*CLASS*	CATTLE	*PREMIUMS*			
Members	*Non-Members*		SHORTHORN—*continued*	*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
			[1] **The Duthie Perpetual Challenge Cup,** value £150, for best Animal in the Shorthorn Classes, "Extra Stock" being eligible to compete.				
			[2] **The Emilio R. Casares, jun., "Junior Champion Cup,"** value £50, for best Shorthorn Bull in Class 5, calved on or after 1st April of the year preceding the Show, that has passed the tuberculin test.				
			[3] **Best Shorthorn Bull in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[3] **Silver Medal** to the Breeder of the winner of above Prize.				
			[4] **Tweeddale Gold Medal,** value about £25, for best Shorthorn Bull.				
			Breeder of best Bull of any age in the five Classes—The Silver Medal.				
			[3] **Best Shorthorn Female in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[3] **Silver Medal** to the Breeder of the winner of above Prize.				
			PRIZE MONEY BY SOCIETY . . **£246**				
			CONTRIBUTED . . . **40**				

---

[1] This Cup was gifted by the late Mr William Duthie, Collynie. The Cup may not be won on more than one occasion with the same animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica as a memento of his winning the Cup.

[2] Given by Mr Emilio R. Casares, jun. This Cup will become the property of the Exhibitor who shall win it three times, not necessarily in succession.

[3] Given by the Shorthorn Society.

[4] Annual Free Income from Fund of £500.

CATTLE

ABERDEEN-ANGUS

Judges : John S. Grant ; C. F. Tulloch

Duke of York Champion Silver Medal for best Aberdeen-Angus Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	11	**Bull** born before 1st December 1930 . . .	15	10	5	3
25/-	45/-	12	**Bull** born on or after 1st December 1930 and before 1st December 1931.	15	10	5	3
25/-	45/-	13	**Bull** born on or after 1st December 1931 and before 1st March 1932	12	8	4	2
25/-	45/-	14	**Bull** born on or after 1st March 1932 . .	10	6	4	2
25/-	45/-	15	**Cow** in Milk, born before 1st December 1929 .	12	8	4	2
25/-	45/-	16	**Cow** in Milk, born on or after 1st December 1929 and before 1st December 1930 . . .	12	8	4	2
25/-	45/-	17	**Cow** or **Heifer** born on or after 1st December 1930 and before 1st December 1931 . . .	10	5	3	2
25/-	45/-	18	**Heifer** born on or after 1st December 1931 and before 1st March 1932	10	5	3	2
25/-	45/-	19	**Heifer** born on or after 1st March 1932 . .	10	5	3	2

[1] **The "Angus" Perpetual Silver Challenge Cup,** value 50 guineas, for the best Animal in the Aberdeen-Angus Classes, "Extra Stock" eligible to compete.

[2] **Silver Cup,** value £50, for best Group of Aberdeen-Angus Cattle, consisting of one Bull and two Females, to become the property of an Exhibitor who shall win it three times, not necessarily in succession. "Extra Stock" eligible to compete.

[3] **Ballindalloch Challenge Cup,** value £50, for the best Bull of any age in the four Classes.

---

[1] This Cup has been presented by the Angus Agricultural Association to commemorate the holding of the Society's Annual Show at Dundee. On this occasion the Cup is offered for the best Aberdeen-Angus Animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender same to the Society and deliver it at the Society's office when called upon to do so.

[2] Given by Mr W. Gilchrist Macbeth of Dunira, Comrie. A Silver Medal will be given by the Society to the winner as a memento of his winning the Cup.

[3] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus Classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The Exhibitor and Breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

CATTLE

ABERDEEN-ANGUS—*continued*

Entry Fees *Members*	*Entry Fees* *Non-Members*	*Class*		*Premiums* *First*	*Second*	*Third*	*Fourth*
				£	£	£	£
			[1] **Silver Cup,** value 50 guineas, for best Aberdeen-Angus Bull born on or after 1st December 1930, to become the property of an Exhibitor who shall win it three times, not necessarily in succession.				
			Breeder of best Bull of any age in the four Classes—The Silver Medal.				
			Exhibitor of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
			Breeder (if not also the Exhibitor) **of the Winner** of the Ballindalloch Challenge Cup—The Silver Medal.				
			[2] **Ballindalloch Challenge Cup,** value £50, for the best Cow of any age in Classes 15, 16, and 17.				
			Exhibitor of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
			Breeder (if not also the Exhibitor) **of the Winner** of the Ballindalloch Challenge Cup—The Silver Medal.				
			[3] **Silver Cup,** value £50, for the best Female Animal of the Aberdeen-Angus breed, to become the property of an Exhibitor who shall win it four times, not necessarily in succession. "Extra Stock" eligible to compete.				
			[4] **Champion Gold Medal,** value £10, for best Animal in the Breeding Classes, breeding animals shown as "Extra Stock" eligible to compete.				
			PRIZE MONEY BY SOCIETY . £226				

---

[1] Given by Senor Eduardo Estanguet, Argentina.

[2] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus Classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The Exhibitor and Breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

[3] Presented by Mr Falconer L. Wallace of Candacraig, Strathdon. A Silver Medal will be given by the Society to the winner as a memento of his winning the Cup.

[4] Given by the Aberdeen-Angus Cattle Society.

CATTLE

GALLOWAY

Judge : John Drynan

Duke of York Champion Silver Medal for best Galloway Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
25/-	45/-	20	**Bull** born before 1st December 1930 . . .	15	10	5	3
25/-	45/-	21	**Bull** born on or after 1st December 1930 and before 1st December 1931	15	10	5	3
25/-	45/-	22	**Bull** born on or after 1st December 1931 . .	12	8	4	2
25/-	45/-	23	**Cow** in Milk, born before 1st December 1930 .	12	8	4	2
25/-	45/-	24	**Cow** or **Heifer** born on or after 1st December 1930 and before 1st December 1931 . . .	10	5	3	2
25/-	45/-	25	**Heifer** born on or after 1st December 1931 . .	10	5	3	2

[1] **Dr Gillespie Memorial Challenge Trophy,** value £50, for best Galloway Animal in the Breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete—see conditions below.

[2] **Silver Challenge Cup,** value £50, for best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Challenge Trophy, "Extra Stock" being eligible to compete.

Breeder of best Bull of any age in the three Classes—The Silver Medal.

PRIZE MONEY BY SOCIETY . £158

---

[1] This Trophy was presented by the Galloway Cattle Society of Great Britain and Ireland for the best Galloway animal registered in the Galloway Cattle Society's Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

[2] This Cup was presented by the Galloway Cattle Society to commemorate the Hundredth Show of the Highland and Agricultural Society, to be awarded to best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Trophy registered in the Galloway Cattle Society's Herd-Book. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

ENTRY FEES		CLASS		*PREMIUMS*			
Members	*Non-Members*		**CATTLE**	*First*	*Second*	*Third*	*Fourth*
			BELTED GALLOWAY	£	£	£	£
			Judge: J. W. Alexander				
			Duke of York Champion Silver Medal for best Belted Galloway Animal				
25/-	45/-	26	**Bull** born before 1st December 1931 . .	10	5	3	2
25/-	45/-	27	**Bull** born on or after 1st December 1931 . .	10	5	3	2
25/-	45/-	28	**Cow or Heifer** born before 1st December 1930, in Milk or in Calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show	10	5	3	2
25/-	45/-	29	**Heifer** born on or after 1st December 1930 and before 1st December 1931	10	5	3	2
25/-	45/-	30	**Heifer** born on or after 1st December 1931 . .	10	5	3	2
			[1] **Knockbrex Challenge Cup,** value £50, for the best Belted Galloway Animal, "Extra Stock" eligible to compete.				
			[2] **The Ian Hamilton Silver Challenge Cup,** value £50, for the best Belted Galloway Animal of the sex opposite to that of the winner of the Knockbrex Challenge Cup, "Extra Stock" eligible to compete. The winning animal to be registered or eligible for registration in the Dun and Belted Galloway Herd-Book.				
			Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 38, 39, 47, 49, 56, and 64. (*For Regulations, see page* 121.)				
			Special Prizes for Cows from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes 28, 38, 39, 40, 47, 48, 49, 56, and 64. (*See page* 120.)				
			PRIZE MONEY BY SOCIETY . . £100				

---

[1] This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Silver Medal as a memento of his winning the Trophy.

[2] This Cup has been presented by General Sir Ian Hamilton, G.C.B. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

CATTLE

HIGHLAND

Judge: John Brown

Duke of York Champion Silver Medal for best Highland Animal

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
25/-	45/-	31	**Bull** born before 1931	15	10	5	3
25/-	45/-	32	**Bull** born in 1931	15	10	5	3
25/-	45/-	33	**Bull** born in 1932	12	8	4	2
25/-	45/-	34	**Cow** of any age with Calf at foot	12	8	4	2
25/-	45/-	35	**Heifer** born in 1930	10	5	3	2
25/-	45/-	36	**Heifer** born in 1931	10	5	3	2
25/-	45/-	37	**Heifer** born in 1932	10	5	3	2

[1] **Perpetual Victory Challenge Cup,** approximate value 50 Guineas, for the best Animal in the Male Classes, "Extra Stock" being eligible to compete.

Breeder of best Bull in Classes 31, 32, and 33—The Silver Medal.

[1] **Perpetual Victory Challenge Cup,** approximate value 35 Guineas, for the best Animal in the Female Classes, "Extra Stock" being eligible to compete.

Prize Money by Society . . £178

---

[1] Given by the Highland Cattle Society of Scotland.

CATTLE

AYRSHIRE

Judges: A. Y. Allan; Robert Dunlop

1. To be eligible for competition in the Ayrshire Section Cows must have an authenticated Milk Yield, and younger Females (including Cows which have not completed their first lactation) and Bulls an authenticated Milking Pedigree, of a definite minimum amount.

2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3·8 per cent of butter fat:—

(*a*) Cows which have completed two or more lactations—700 gallons.

(*b*) Cows which have completed only one lactation—600 gallons.

(*c*) Younger Females and Bulls—an authenticated Milking Pedigree for dam and dam of sire on a similar basis.

3. In the case of Cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

4. In the case of a Cow which has no milking pedigree, and which has not completed her first lactation at date of entry, but is likely to calve again before date of Show, such Cow may be provisionally entered on her own milk yield produced within forty weeks after first calving, but when the Cow has calved again a further Certificate in terms of the Rules must be obtained and produced before the Cow is allowed to enter the judging ring The latter Certificate is the standard of qualification, and failure to produce such will render the Cow liable to disqualification, and no entry money will be returned.

5. The evidence of Milk Yield and Milking Pedigree shall be in the form of a Certificate signed by the Secretary of the Scottish Milk Records Association. The Certificate, besides giving the actual yields, shall give these calculated on a uniform basis of a period of 52 weeks between calvings, and 3·8 per cent butter fat. This latter figure shall be communicated to the Judges before adjudicating.

In the case of an Exhibitor founding on the Milk Yield of any animal, or animals, made in England, said Exhibitor must forward a Certificate of Milk Yield from the Secretary of the County Milk Recording Society in which the Exhibitor resides, together with a Certificate from a competent analyst, stating that a butter-fat test had been made at least once every 28 days during the period of lactation, and with details of said butter-fat tests attached, to the Secretary of the Scottish Milk Records Association, who has undertaken to check the records and to certify same.

6. The authenticated Milk Yields and authenticated Milking Pedigrees shall appear in the Catalogue.

N.B.—**Certificates above referred to must be obtained from Mr John Howie, 58 Alloway Street, Ayr, and lodged with Entries.**

Duke of York Champion Silver Medal for best Ayrshire Animal

ENTRY FEES		CLASS		PREMIUMS		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
25/-	45/-	38	[1] **Cow** in Milk,* born before 1930	12	8	4
25/-	45/-	39	[1] **Cow** in Milk,* born on or after 1st January 1930	10	7	3
25/-	45/-	40	[1] **Cow** of any age in Calf,* and due to calve before 1st December of the year of the Show	10	7	3
25/-	45/-	41	**Heifer** * born on or after 1st June 1930, in Calf and due to calve before 1st December of the year of the Show	10	7	3
25/-	45/-	42	**Heifer** * born in 1931	10	5	3
25/-	45/-	43	**Heifer** born in 1932	8	5	3

---

[1] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

* See Rules 42 and 72.

CATTLE

AYRSHIRE—*continued*

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
25/-	45/-	44	Bull born before 1931	12	8	4
25/-	45/-	45	Bull born in 1931	10	7	3
25/-	45/-	46	Bull born in 1932	8	5	3

[1] **Dundee Citizens' Perpetual Silver Challenge Cup**, value about £50, for the best Animal in the Ayrshire Classes, "Extra Stock" eligible to compete.

[2] **Cowhill Champion Cup**, approximate value £30, for best Animal of the Ayrshire breed, entered with a number in the Herd-Book. The Cup to be won three times, not necessarily in succession, by the same person with different animals, before becoming the property of the winner.

[3] **Special Prize of £10** for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd Book prior to 1st June 1933.

Breeder of best Bull of any age in Classes 44, 45, and 46—The Silver Medal.

[3] **Special Prize of £10** for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd Book prior to 1st June 1933.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 38, 39, 47, 49, 56, and 64. (*For Regulations, see page* 121.)

Special Prizes for Cows from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes 28, 38, 39, 40, 47, 48, 49, 56, and 64. (*See page* 120.)

PRIZE MONEY BY SOCIETY	£178
CONTRIBUTED	20

---

[1] This Cup has been presented by the Citizens of Dundee to commemorate the holding of the Society's Annual Show at Dundee. On this occasion the Cup is offered for the best Ayrshire Animal. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender same to the Society, and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Medal as a memento of his winning the Trophy.

[2] Presented by the late Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland.

[3] Given by the Ayrshire Cattle Herd Book Society.

CATTLE

BRITISH FRIESIAN

Judges : F. W. Gilbert ; William Marriage

Duke of York Champion Silver Medal for best British Friesian Animal

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£		£
25/-	45/-	47	[1] **Cow** in Milk,* born in or before 1929 . .	12	8	4	2
25/-	45/-	48	[1] **Cow** in Calf,* and not in Milk, born in or before 1929	10	5	3	2
25/-	45/-	49	[1] **Cow** in Milk,* born in 1930 or 1931 . .	10	5	3	2
25/-	45/-	50	**Heifer** * born in 1931	10	5	3	2
25/-	45/-	51	**Heifer** born in 1932, before 1st July . . .	10	5	3	2
25/-	45/-	52	**Heifer** born in 1932, on or after 1st July . .	10	5	3	2
25/-	45/-	53	**Bull** born in or before 1930	12	8	4	2
25/-	45/-	54	**Bull** born in 1931	10	5	3	2
25/-	45/-	55	**Bull** born in 1932	10	5	3	2

[2] **The MacRobert Champion Silver Bell,** value 50 Guineas, for the best Animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Society's Herd-Book, "Extra Stock" eligible to compete.

[3] **Silver Challenge Cup,** value 50 guineas, for the best Group of three animals. The Cup to become the property of an Exhibitor winning it three times, not necessarily in succession. "Extra Stock" eligible to compete.

Champion Prize of £5 given by the British Friesian Cattle Society for the best Female exhibited.

Breeder of Best Bull of any age in Classes 53, 54, and 55—The Silver Medal.

Champion Prize of £5 given by the British Friesian Cattle Society for the best Male exhibited.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk entered in Classes 28, 38, 39, 47, 49, 56, and 64. (*For Regulations, see page* 121.)

Special Prizes for Cows from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes 28, 38, 39, 40, 47, 48, 49, 56, and 64. (*See page* 120.)

Prize Money by Society . . . £152

[3] Contributed 50

---

* See Rules 42 and 72.

[1] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[2] Presented by Lady Rachel Workman MacRobert, Douneside, Tarland. This Bell will become the property of the Exhibitor who shall win it three times, not necessarily in succession. The winner of the Bell on each occasion will receive a miniature replica in silver as a memento of winning the Bell. The Breeder of the winning animal will also receive a replica, provided he or she is not also the Exhibitor.

[3] Given by the British Friesian Cattle Society.

CATTLE

RED POLL

Judge: W. P. Bailey

Duke of York Champion Silver Medal for best Red Poll Animal

ENTRY FEES		CLASS		PREMIUMS		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
25/-	45/-	56	[1] **Cow** in Milk or in Calf, born before 1931 . .	10	5	3
25/-	45/-	57	**Heifer** born in 1931	10	5	3
25/-	45/-	58	**Heifer** born in 1932	10	5	3
25/-	45/-	59	**Bull** born in or before 1931	10	5	3
25/-	45/-	60	**Bull** born in 1932	10	5	3

[2] **Kinmount Challenge Cup,** value about £50, for the best Female Animal in the Red Poll Classes registered in the Red Poll Cattle Society's Herd-Book, "Extra Stock" being eligible to compete.

Edinburgh Corporation Perpetual Gold Challenge Cup for best Dairy Cow in Milk, entered in Classes 28, 38, 39, 47, 49, 56, and 64. (*For Regulations, see page* 121.)

Special Prizes for Cows from Grade "A" Tuberculin Tested) or Certified Herds, drawn from Classes 28, 38, 39, 40, 47, 48, 49, 56, and 64. (*See page* 120.)

PRIZE MONEY BY SOCIETY . . £70

[3] CONTRIBUTED PRIZES . . . 20

---

[1] Cows in this Class must have produced a calf within fifteen months prior to the Show.

[2] This Cup was presented to the Society by the late Lieut.-Colonel Charles Brook of Kinmount, Annan. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so.

[3] **Contributed by Red Poll Cattle Society.**

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
			CATTLE **FAT CATTLE** Judge : C. F. Tulloch (*To be judged at* 2.30 P.M. *on Tuesday, 20th June*) *Duke of York Champion Silver Medal for best Fat Animal*	£	£	£	£
25/-	45/-	61	**Bullock,** any pure breed or cross, born on or after 1st December 1930 and before 1st December 1931	7	3	–	–
25/-	45/-	62	**Bullock,** any pure breed or cross, born on or after 1st December 1931	7	3	–	–
25/-	45/-	63	**Heifer,** any pure breed or cross, and of any age .	7	3	–	–
			PRIZE MONEY BY SOCIETY . . £30				
			[Exhibitors of Fat Cattle must state the breed of the sire and dam when making their entries.]				
			DAIRY COWS Judge : William Burkitt (*To be judged at* 9.30 A M. *on Tuesday, 20th June*) *Duke of York Champion Silver Medal for best Dairy Cow in Class* 64				
25/-	45/-	64	***Dairy Cow,** in Milk, any pure breed or cross, and of any age	10	7	3	–
			N.B.—Pure Bred Dairy Cows for which Classes are otherwise provided—*e.g.*, Belted Galloways, Ayrshires with milk records, British Friesians, and Red Polls—are not eligible for this Class. Cows in this Class are also eligible to compete for The Edinburgh Corporation Perpetual Gold Challenge Cup (*for Regulations, see next page*), and for Special Prizes for Cows from Grade "A" (Tuberculin Tested) or Certified Herds (*see below*).				
			PRIZE MONEY BY SOCIETY . . £20				
			Special Prizes for Dairy Cows Judge : William Burkitt (*To be judged at* 11 A.M. *on Wednesday,* 21*st June*)				
			[1] **Cows** from Grade "A" (Tuberculin Tested) or Certified Herds, drawn from Classes 28, 38, 39, 40, 47, 48, 49, 56, and 64	12	8	5	3
			PRIZE MONEY BY SOCIETY . . . £8 [1] CONTRIBUTED 20				

---

* See Rules 32 and 42.

[1] £10 given by Messrs Brown & Polson, Ltd., Paisley, and £10 given by Messrs William MacKean, Ltd., Paisley.

CATTLE

DAIRY COWS—*continued*

Judge: William Burkitt

(*To be judged for inspection points at* 10.30 A.M. *on Wednesday,* 21*st June*)

ENTRY FEES *Members*	*ENTRY FEES* *Non-Members*	*CLASS*		*PREMIUMS* *First*	*PREMIUMS* *Second*	*PREMIUMS* *Third*	*PREMIUMS* *Fourth*
				£	£	£	£
5/-	5/-	65	**Perpetual Gold Challenge Cup,** presented by the Corporation of the City of Edinburgh to commemorate the Hundredth Show of the Highland and Agricultural Society of Scotland. The Cup to be offered this year for the best Dairy Cow in Milk, entered in Classes 28, 38, 39, 47, 49, 56, and 64. "Extra Stock" eligible to compete. A **Gold Medal,** value ten guineas, given by Dr T. G. Nasmyth, Edinburgh, will be presented to the winner as a memento of his winning the Cup.				

A separate entry form must be lodged for each animal entered for this Cup on or before 3rd May.

CONDITIONS OF AWARD.

1. All cows competing must be in milk.
2. All animals, except those from Certified or Grade "A" (T.T.) Herds, must have passed the Double Intradermal Tuberculin Test not more than three months and not less than one month prior to the first day of the Show. The Test must be carried out by a County or City Veterinary Inspector, where such is available, failing whom by a Veterinary Surgeon approved by the Board of Directors of the Society. A certificate to this effect must be lodged with the Secretary, at 8 Eglinton Crescent, Edinburgh 12, not later than Wednesday, 31st May.
3. Points be given for (*a*) Inspection, (*b*) Weight of Milk, (*c*) Butter fat, (*d*) Lactation period.
4. Points to be awarded as follows:—
   Inspection.—
   Maximum of 100 points for inspection.
   Milk Yield—
   (*a*) One point for every 10 days since calving, deducting the first 40 days, with a maximum of 12 points.
   (*b*) One point for every pound of milk produced.
   (*c*) Twenty points for every pound of butter fat produced.
   Deduction—Ten points each time the butter fat is under 3 per cent. No cow will be eligible for the Cup whose average butter fat, over the two milkings, is less than 3·5 per cent.
5. Animals competing for the Cup must be clean milked, to the satisfaction of the Stewards, on Wednesday, 21st June, at 7 A.M. The place and order of milking will be arranged by the Stewards. The milk of the next 24 hours will be taken for the Competition. The times of milking will be 7 P.M. on Wednesday, 21st June, and 7 A.M. on Thursday, 22nd June.
6. The milk yielded during the Competition shall be the property of the Society.

PRIZE MONEY BY SOCIETY .	.£1366	0
CONTRIBUTED . . .	. 150	0
CUPS, MEDALS, &c.. .	. 1174	15
Total Prizes for Cattle	.£2690	15

[See Note as to EXTRA STOCK, p. 140.]

*HORSES

CLYDESDALE

STALLION AND COLT

Judges: George Argo; James Gray

(To be judged at 9.30 A.M. on Tuesday, 20th June)

Duke of York Champion Silver Medal for best Clydesdale Stallion or Colt

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
55/-	75/-	66	**Stallion** born before 1930	20	15	10	4
55/-	75/-	67	**Entire Colt** born in 1930	20	15	10	4
55/-	75/-	68	**Entire Colt** born in 1931	20	15	10	4
40/-	60/-	69	**Entire Colt** born in 1932	15	9	6	4

[1] **Paisley Perpetual Gold Challenge Cup,** value £300, for best Clydesdale Stallion or Colt, "Extra Stock" being eligible to compete.

[2] **Cawdor Challenge Cup,** value 50 Guineas, for best Clydesdale Stallion or Colt.

Breeder of best Male Animal of any age in the above Classes—The Silver Medal.

[3] **William Taylor Memorial Prize of £10 and Certificate** to the breeder of the best Clydesdale Colt entered in Classes 68 and 69.

PRIZE MONEY BY SOCIETY . . £181

CONTRIBUTED PRIZE . . . 10

*** For prizes given by the Society, no animal is allowed to enter in more than one Class, except that horses entered in other Classes may also compete in the Jumping Classes.**

[1] This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best Clydesdale Stallion or Colt. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Stallion or Colt registered in the Clydesdale Stud-Book, entered in any of the Clydesdale Horse Classes, at the Show at which it may be competed for. No Stallion rising five years old or upwards will be allowed to compete for this Cup unless proof be furnished to satisfy a Committee, appointed for this purpose by the Council of the Clydesdale Horse Society, that he has during the preceding season left at least 35 per cent of the mares served by him in foal. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. No animal which has won a Cawdor Cup shall be eligible to compete. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

[3] Given by William Taylor Memorial Committee.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

CLYDESDALE—*continued*

GELDING

Got by a Registered Clydesdale Stallion

Judges: George Argo ; James Gray

(*To be judged at* 2.30 P.M. *on Tuesday,* 20th *June*)

Duke of York Champion Silver Medal for best Clydesdale Gelding

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
40/-	60/-	70	**Gelding** born before 1930	15	9	6	4
40/-	60/-	71	**Gelding** born in 1930	15	9	6	4
40/-	60/-	72	**Gelding** born in 1931	15	9	6	4
40/-	60/-	73	**Gelding** born in 1932	12	8	4	2

[1] **The Meiklem Gold Challenge Cup,** value 110 guineas, for best Clydesdale Gelding, to become the property of an Exhibitor who shall win it four times with different animals, but not necessarily in succession. "Extra Stock" eligible to compete.

PRIZE MONEY BY SOCIETY . £128

---

[1] Given by Mr William Meiklem, Bennochy Park, Kirkcaldy.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

CLYDESDALE—*continued*

MARE AND FILLY

Judges : James Fleming ; George M'Dowall

(*To be judged at* 9.30 A.M. *on Tuesday, 20th June*)

Duke of York Champion Silver Medal for best Clydesdale Mare or Filly

Entry Fees		*Class*		*Premiums*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
55/-	75/-	74	**Mare** of any age, with Foal at foot, or due to foal before 31st July 1933	20	12	7	4
40/-	60/-	75	**Yeld Mare** born before 1930. . . .	15	9	6	4
40/-	60/-	76	**Yeld Mare or Filly** born in 1930 . . .	15	9	6	4
40/-	60/-	77	**Filly** born in 1931	15	9	6	4
40/-	60/-	78	**Filly** born in 1932	15	9	6	4

[1] **Cawdor Challenge Cup,** value 50 Guineas, for best Clydesdale Mare or Filly.

PRIZE MONEY BY SOCIETY . . £179

Total Prize Money for Clydesdale Horses, £498

SHIRE

Judge : James Clark

(*To be judged at* 3.45 P.M. *on Tuesday, 20th June*)

Duke of York Champion Silver Medal for best Shire Gelding

Entry Fees		*Class*		*Premiums*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
40/-	60/-	79	**Gelding,** born before 1931, got by a registered Shire Stallion	15	9	6	4

PRIZE MONEY BY SOCIETY . . £34

---

[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-Book, entered in any of the Clydesdale Horse Classes, at the Show at which it may be competed for. The Cup must be won four times by an Exhibitor with different animals (but not necessarily in consecutive years) before it becomes his absolute property. No animal which has won a Cawdor Cup shall be eligible to compete. The animal winning this Cup must be certified free from hereditary disease. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner on each occasion will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			HORSES				
			SUFFOLK				
			Judge: Captain C. E. FitzRoy	£	£	£	£
			(*To be judged at* 3 P.M. *on Tuesday,* 20*th June*)				
			Duke of York Champion Silver Medal for best Suffolk Gelding				
40/-	60/-	80	**Gelding,** born before 1931, got by a registered Suffolk Stallion	15	9	6	4
			Prize Money by Society . . £24				
			[1] Contributed Prize 10				
			HUNTER				
			Judge: Captain Guy Lucas				
			(*Classes* 81 *to* 84 *to be judged at* 11 A.M. *on Tuesday,* 20*th June*)				
			Duke of York Champion Silver Medal for best Hunter				
55/-	75/-	81	**Hunter Brood Mare,** with Foal at foot, or due to foal before 31st July 1933 . . .	15	7	3	–
40/-	60/-	82	**Yeld Mare, Filly, or Gelding** born in 1930—*in hand*	10	5	3	–
40/-	60/-	83	**Yeld Mare, Filly, or Gelding** born in 1931—*in hand*	10	5	3	–
40/-	60/-	84	**Filly, Colt, or Gelding** born in 1932—*in hand* .	10	5	3	–
			(*Classes* 85 *and* 86 *to be judged at* 3 P.M. *on Tuesday,* 20*th June*)				
40/-	60/-	85	**Mare or Gelding** born before 1929, to carry 13 stone and over—*in saddle*	15	10	5	--
40/-	60/-	86	**Mare or Gelding** born in 1929, to carry 12 stone 7 lbs. and over—*in saddle*	15	10	5	--
			[2] **Dumfries Centenary Silver Challenge Cup,** value £100, for best Hunter. The Cup to become the property of an Exhibitor who shall win it three times, not necessarily in succession, at Shows at which there are not less than three Saddle Classes. "Extra Stock" not eligible to compete.				
			[3] **Best Hunter Filly,** entered in Classes 82, 83, and 84, registered with a number in the Hunter Stud-Book, or the entry tendered within one month of the award—Champion Gold Medal, value £5.				
			Prize Money by Society . . £139				

---

[1] Given by Suffolk Horse Society.

[2] Presented by Members of the Dumfriesshire Hunt to commemorate the centenary of the Highland Society's first Show at Dumfries in 1830.

[3] Given by the Hunters' Improvement and National Light Horse Breeding Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

*[1] HIGHLAND and WESTERN ISLAND PONIES

Judge: George Mundell

Duke of York Champion Silver Medal for best Highland or Western Island Pony (Classes 87 to 91)

(To be judged at 2 P.M. on Tuesday, 20th June)

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
40/-	60/-	87	**Stallion** born before 1931, not exceeding 14.2 hands	8	4	2
40/-	60/-	88	**Entire Colt** born on or after 1st January 1931, not exceeding 14.2 hands	6	4	2
40/-	60/-	89	**Mare**, any age, not exceeding 14.2 hands, with Foal at foot, or due to foal before 31st July 1933 .	8	4	2
40/-	60/-	90	**Yeld Mare** born before 1931, not exceeding 14.2 hands	8	4	2
40/-	60/-	91	**Filly** born on or after 1st January 1931, not exceeding 14.2 hands	6	4	2
40/-	60/-	92	**Gelding** born before 1931, not exceeding 14.2 hands	6	4	2

[2] **Special Prize of £8** given by Highland Pony Society for best Male Animal not exceeding 14.2 hands, entered in Classes 87, 88, and 92. "Extra Stock" not eligible to compete.

[2] **Special Prize of £8** given by Highland Pony Society for best Female Animal not exceeding 14.2 hands, entered in Classes 89, 90, and 91. "Extra Stock" not eligible to compete.

PRIZE MONEY BY SOCIETY . £38
CONTRIBUTED PRIZES . . 56

---

* See Rule 28.

[1] The Department of Agriculture for Scotland give £40 towards prizes for Highland and Western Island Ponies.

[2] The animals winning these prizes must be entered or accepted for entry in the Highland Section of the National Pony Stud-Book. Competition to be strictly confined to animals passed sound and free from hereditary disease.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

SHETLAND PONIES

Judge: Charles Aitkenhead

(*To be judged at* 2 P.M. *on Tuesday,* 20*th June*)

(*All to be shown in hand*)

Duke of York Champion Silver Medal for best Shetland Pony

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
35/-	55/-	93	**Stallion,** not exceeding 10½ hands, born before 1930	8	5	3	2
35/-	55/-	94	**Entire Colt,** not exceeding 10½ hands, born in 1930 or 1931	8	5	3	2
35/-	55/-	95	**Mare,** not exceeding 10½ hands, with Foal at foot, or due to foal before 31st July 1933	8	5	3	2
35/-	55/-	96	**Yeld Mare,** not exceeding 10½ hands	8	5	3	2
35/-	55/-	97	**Filly,** not exceeding 10½ hands, born in 1930 or 1931	8	5	3	2
			[1] **Fife and Kinross Perpetual Gold Challenge Cup,** value £200, for best Shetland Pony, "Extra Stock" being eligible to compete.				
			[2] **Best Group of Shetland Ponies,** drawn from the ordinary Classes, consisting of one male and two females	10	–	–	–
			[3] **Silver Medal** for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.				
			PRIZE MONEY BY SOCIETY . . £90				
			CONTRIBUTED PRIZES . . 10				

---

[1] This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best Shetland Pony. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.

[3] Given by the Shetland Pony Stud-Book Society.

Stallions and Colts, 2 years old and upwards, must be licensed for stud purposes. See Rule 39.

HORSES

SADDLE CLASSES

Judge: Captain Guy Lucas

(*To be judged at* 4 P.M. *on Wednesday*, 21*st June*)

Entry Fees Members	Entry Fees Non-Members	Class		Premiums First £	Second £	Third £	Fourth £
20/-	30/-	98	**Mare or Gelding,** any age, over 13.2 hands, and not exceeding 15 hands—*in saddle* . . .	5	3	2	–
20/-	30/-	99	**Mare or Gelding,** any age, not exceeding 13.2 hands —*in saddle*	5	3	2	–

PRIZE MONEY BY SOCIETY . . £20

[Ponies in the above Classes must be in the Showyard not later than 10 A.M. on Wednesday. Exhibited Wednesday, Thursday, and Friday.]

[1] HORSES IN HARNESS

Judge: Alexander Morton

(*To be judged at* 11.15 A.M. *on Wednesday*, 21*st June*)

[2] ***Duke of York Champion Silver Medal for best Animal in the Classes for Horses in Harness***

Entry Fees Members	Entry Fees Non-Members	Class		Premiums First £	Second £	Third £	Fourth £
40/-	60/-	100	**Yeld Mare, Filly, or Gelding,** any age, in Harness, exceeding 15 hands, to be driven in the ring .	15	10	5	–
40/-	60/-	101	**Yeld Mare, Filly, or Gelding,** any age, in Harness, over 14 hands and not exceeding 15 hands, to be driven in the ring	15	10	5	–
40/-	60/-	102	**Yeld Mare, Filly, or Gelding,** any age, in Harness, not exceeding 14 hands, to be driven in the ring .	10	5	3	–

PRIZE MONEY BY SOCIETY . . £78

[Horses in Harness Classes must be in the Showyard not later than Tuesday evening, judged on Wednesday, and may leave the Showyard on Thursday immediately after the Afternoon Parade.]

Shed accommodation for machines for Driving Competitions—Members, 10s.; Non-Members, 20s.

---

[1] Animals entered in other Classes may be entered in the Harness Classes at an additional fee of 5s. if they are eligible.

[2] *An animal that has won a Duke of York Champion Medal in another section in this Show shall not be eligible to compete for the Medal in this section.*

HORSES

DRAUGHT GELDINGS IN HARNESS

Judge : James Fleming

(*To be judged at* 11 A.M. *on Friday*, 23*rd June*)

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	PREMIUMS Second	PREMIUMS Third
5/-	10/-	103	**Draught Gelding** in Cart Harness (to be shown without vehicle), it being a condition that the Horse must have been regularly worked for a period of 12 weeks prior to the first day of the Show, to be exhibited on Friday, the 23rd June; only the prize-winners to take part, as required, in the Parade on Friday. Prize Money—£10, £5, £3, £2 and £1.			

Prize Money by Society . . £21

(Geldings entered in Classes 70, 71, 72, 73, 79, and 80 not eligible)

[*Note.*—Entries close on 13th June. The Entries to appear in the Jumping Programme for Friday, 23rd June.]

Prize Money by Society .	£932 0
Contributed	86 0
Cups, Medals, &c. . .	825 10
Total Prizes for Horses	**£1843 10**

[See Note as to **EXTRA STOCK**, p. 140.]

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(See also the Regulations on pages 91 *to* 100)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, 21st, 22nd, and 23rd June, and on the evenings of Wednesday and Thursday, 21st and 22nd June.
2. *Entries* for each afternoon Competition will close at the Secretary's Office in the Showyard at 5 P.M. on the preceding day. Entries for Evening Jumping may be received until 5 P.M. on the evening of the Competition.
3. *Entry Fees.*—Wednesday and Thursday afternoons, £1; Friday, 10s. Evening Jumping, 10s.
4. *Accommodation* for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, loose-boxes will be provided at a charge (in addition to the Entry Fee) of £1, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at the close of the jumping.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

ENTRY FEE	*CLASS*	**WEDNESDAY.**	*First*	*Second*	*Third*	*Fourth*	*Fifth*
		AFTERNOON.	£	£	£	£	£
20/-	1	**Horse or Pony,** any height	20	15	10	5	3
		EVENING.					
10/-	2	**Horse or Pony,** any height, confined to competitors permanently resident in Scotland. The Horse or Pony to have been the property of the competitor since 1st May 1933 . . .	10	8	5	3	2
		THURSDAY.					
		AFTERNOON.					
20/-	3	**Horse or Pony,** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	20	15	10	5	3
		EVENING.					
10/-	4	**Horse or Pony,** any height	10	8	5	3	2
		FRIDAY.					
		AFTERNOON.					
10/-	5	**Horse or Pony,** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3	15	10	5	3	2
		Champion Prize for most points in Prizes with *one horse* in Classes 1, 3, and 5—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie . .	10	–	–	–	–
		Total Prize Money for Jumping, £207.					

Special Entry Forms for above Competitions to be had on application.

SHEEP

*BLACKFACE

Judges: James D. Bennie; Walter C. Burton

Duke of York Champion Silver Medal for best Blackface Sheep

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
15/-	25/-	104	**Tup** three shear and over	12	8	4	2
15/-	25/-	105	**Tup** two shear	12	8	4	2
15/-	25/-	106	**Shearling Tup**	12	8	4	2
15/-	25/-	107	**Tup Lamb**	5	3	2	-
15/-	25/-	108	**Ewe** above one shear (born before 1932), unclipped, **with Lamb at foot**	10	5	3	2
15/-	25/-	109	**Shearling Ewe or Gimmer** (born in 1932)	10	5	3	2

[1] **Renfrewshire Perpetual Gold Challenge Cup,** value £250, for best Blackface Sheep, "Extra Stock" eligible to compete.

[2] **The "James Archibald" Prize,** of about £20, for the best Sheep in the Blackface Classes (excluding Lambs), "Extra Stock" eligible to compete.

PRIZE MONEY BY SOCIETY	£128
CONTRIBUTED PRIZE	20

---

* Formal Declarations must be made at time of entry that the conditions as regards clipping, &c., have been strictly adhered to.

[1] This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir M'Kean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913. This year the Cup is offered for the best Blackface Sheep. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] This Prize consists of the annual free income from a fund of £600, gifted by the late Mr David Archibald, Christchurch, New Zealand, to found a Prize to be offered at the Annual Shows of the Society in commemoration of his brother, the late James Archibald, Overshiels, Stow.

SHEEP

CHEVIOT

Judges : Thomas Elliot ; Thomas Scott

Duke of York Champion Silver Medal for best Cheviot Sheep

ENTRY FEES		*CLASS*		*PREMIUMS*			
Members	*Non-Members*			*First*	*Second*	*Third*	*Fourth*
				£	£	£	£
15/-	25/-	110	**Tup** above one **shear**	12	8	4	2
15/-	25/-	111	**Shearling Tup**	12	8	4	2
15/-	25/-	112	**Tup Lamb**	5	3	2	–
15/-	25/-	113	**Ewe** above one shear, with **Lamb** at foot . .	10	5	3	2
15/-	25/-	114	**Shearling Ewe or Gimmer**	10	5	3	2
15/-	25/-	115	**Ewe Lamb**	5	3	2	–

[1] **Borthwick Perpetual Challenge Cup,** value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot Classes.

PRIZE MONEY BY SOCIETY . . £112

---

[1] Given by Cheviot Sheep Society.

SHEEP

BORDER LEICESTER

Judges : Robert W. Bell ; William Faulder

Duke of York Champion Silver Medal for best Border Leicester Sheep

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	Second	Third	Fourth
				£	£	£	£
15/-	25/-	116	**Tup above one shear**	12	8	4	2
15/-	25/-	117	**Shearling Tup**	12	8	4	2
15/-	25/-	118	**Tup Lamb**	8	5	3	-
15/-	25/-	119	**Ewe above one shear**	10	5	3	2
15/-	25/-	120	**Shearling Ewe or Gimmer**	10	5	3	2
15/-	25/-	121	**Ewe Lamb**	5	3	2	–

[1] **Gold Medal** for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.

[1] **Gold Medal** for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.

PRIZE MONEY BY SOCIETY . . £118

---

[1] Given by the Society of Border Leicester Sheep Breeders.

SHEEP

HALF-BRED

Judge : William I. Elliot

Duke of York Champion Silver Medal for best Half-Bred Sheep

ENTRY FEES		*CLASS*		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
15/-	25/-	122	**Shearling Tup**	10	7	3
15/-	25/-	123	**Ewe above one shear**	10	5	2
15/-	25/-	124	**Shearling Ewe or Gimmer**	10	5	2
15/-	25/-	125	**Ewe Lamb**	5	3	2

Prize Money by Society . . £64

OXFORD DOWN

Judge : Robert Hobbs

(*All sheep to be entered or eligible for entry in the Flock-Book*)

Duke of York Champion Silver Medal for best Oxford Down Sheep

Members	*Non-Members*	*CLASS*		*First*	*Second*	*Third*
15/-	25/-	126	**Shearling Tup**	8	5	3
15/-	25/-	127	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	128	**Tup Lamb**	8	5	3
15/-	25/-	129	**Ewe Lamb**	5	3	2

[1] **Scottish Oxford Down Sheep-Breeders' Challenge Bowl,** value £50, for the best Oxford Down Animal bred in Scotland, to be won three times by the same owner, but with different sheep, before becoming his property.

Prize Money by Society . . £47
[1] Contributed Prizes . . . 11

---

[1] Given by Oxford Down Sheep-Breeders' Association.

SHEEP

SUFFOLK

Judge : G. A. Goodchild

(*All sheep to be entered or eligible for entry in the Flock-Book*)

Duke of York Champion Silver Medal for best Suffolk Sheep

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£
15/-	25/-	130	**Tup** one shear and over	8	5	3
15/-	25/-	131	**Shearling Ewe or Gimmer**	8	5	3
15/-	25/-	132	**Tup Lamb**	8	5	3
15/-	25/-	133	**Ewe Lamb**	5	3	2

[1] **Silver Challenge Cup,** value £15, offered by the Suffolk Sheep Society for best Group of Suffolk Sheep, consisting of one Tup, one shear and over, one Shearling Ewe or Gimmer, one Tup Lamb, and one Ewe Lamb, the Females and Tup Lamb must be bred by Exhibitor—*drawn from above Classes.* The Cup to become the property of an Exhibitor winning it three times, not necessarily in succession.

PRIZE MONEY BY SOCIETY . . £58

SHROPSHIRE

Judge : John M. Belcher

Duke of York Champion Silver Medal for best Shropshire Sheep

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
15/-	25/-	134	**Tup,** any age	6	4	2
15/-	25/-	135	**Ewe or Gimmer**	5	3	2

PRIZE MONEY BY SOCIETY . . £22

---

[1] Given by the Suffolk Sheep Society.

SHEEP

DORSET HORN

Judge: W. C. Smart

Duke of York Champion Silver Medal for best Dorset Horn Sheep

Entry Fees: Members	Entry Fees: Non-Members	Class		Premiums: First £	Premiums: Second £	Premiums: Third £
15/-	25/-	136	**Tup**, any age	6	4	2
15/-	25/-	137	**Ewe or Gimmer**	5	3	2

Prize Money by Society . . .	£17
[1] Contributed Prizes . . .	5

FAT SHEEP

Judge: William I. Elliot

Duke of York Champion Silver Medal for best pen of Fat Sheep

Entry Fees: Members	Entry Fees: Non-Members	Class		Premiums: First £	Premiums: Second £	Premiums: Third £
15/-	25/-	138	**Three Fat Lambs**, any breed or cross, dropped in the year of the Show	5	3	2

[Exhibitors of Fat Sheep must state the breed of sire and dam when making their entries.]

Prize Money by Society . . £10

Prize Money by Society . .	£576	0
Contributed	36	0
Cups, Medals, &c. . . .	360	0
Total Prizes for Sheep .	£972	0

[See Note as to **EXTRA STOCK**, p. 140.]

---

[1] Given by the Dorset Horn Sheep-Breeders' Association, Dorchester, Dorset.

GOATS

Judge: N. Cradock

REGULATIONS FOR GOAT CLASSES.

The animals will be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward or a representative of the Society duly authorised by him.

All exhibits must be registered either in the Herd-Book, Foundation Book or Show Register of the British Goat Society, in the name of the Exhibitor (the registered number being quoted on the entry form), or, if previously entered or owned by someone other than the Exhibitor, a transfer of ownership must be registered with the British Goat Society.

Duke of York Champion Silver Medal for best Animal in the Goat Classes

(*All animals must be registered*)

ENTRY FEES		CLASS		*PREMIUMS*		
Members	*Non-Members*			*First*	*Second*	*Third*
				£	£	£
5/-	10/-	139	**Female Goat,** Toggenburg, British Toggenburg, or British Alpine, in Milk	3	2	1
5/-	10/-	140	**Female Goat,** Saanen or British Saanen, in Milk	3	2	1
5/-	10/-	141	**Female Goat,** any other variety, in Milk	3	2	1
5/-	10/-	142	**Goatling,** Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years	3	2	1
5/-	10/-	143	**Goatling,** any other variety, over one but not exceeding two years	3	2	1
5/-	10/-	144	**Female Kid,** any variety, not exceeding one year	3	2	1
5/-	10/-	145	**Male Kid,** any variety, not exceeding one year	3	2	1
5/-	10/-	146	**Milking Competition,** for quality, open to Classes 139, 140, and 141	3	2	1
5/-	10/-	147	**Milking Competition,** for quantity, open to Classes 139, 140, and 141	3	2	1

The Competition for Goats is recognised by the British Goat Society, Roydon Road, Diss, Norfolk, which will give Challenge Certificates (qualifying for a Championship) for the best Female Goat over two years that has borne a kid; for the best dual purpose Goat over two years that has borne a kid; and a Bronze Medal for the best female exhibit in Classes 139 to 144 inclusive.

ENTRY FEES		CLASS		PREMIUMS		
Members	Non-Members			First	Second	Third
				£	£	£

GOATS

[1] **Challenge Cup, value 20 Guineas, for the best Female Goat in the Show.**

[2] **Challenge Cup, value £10, for best Female Anglo-Nubian Goat over two years old, in Milk, entered in the Anglo-Nubian section of the Herd-Book, "Extra Stock" eligible to compete.**

Regulations for Milking Competition (Classes 146 and 147).

Goats entered for this Competition must be entered in both the Quality and Quantity Classes.

The animals will be milked at 5 P.M. on Tuesday, 20th June, at an appointed place in the order arranged by the Steward, and the milk of the next twenty-four hours will be taken for the Quality and Quantity Milking Competitions. The hours of milking shall be 8 A.M. and 5 P.M. on Wednesday, 21st June.

The prizes will be awarded according to the following scale of points:—

For each pound of milk . . .	1 point.
For each complete 6 days the Goat has been in milk (omitting the first forty days), with a maximum of 5·4 points .	$\frac{1}{10}$ of a point.
For each ¼ lb. of fat in the milk . .	5 points.

In cases where the milk contains less than 3 per cent of fat 1 point will be deducted.

In the Quantity Milking Competition points will be awarded for quantity and lactation only.

The period of lactation to be calculated from the date of kidding to the first day of the Show. No prize will be awarded to a Goat giving less than 5½ lbs. of milk per day.

Fractions of lbs. of milk and percentages of fat to be worked out in decimals and added to the total points.

A Certificate giving the last date of kidding, signed by the owner of the Goat exhibited, or his Agent, must in every case be brought to the Steward of Goats as soon as possible after the animal has arrived in the Showyard.

The milk yielded by Goats in the Showyard shall be the property of the Society.

***Note.*—No animal is allowed to compete in more than one Class, except that Goats entered in Classes 139, 140, and 141 may also be entered in Classes 146 and 147.**

Prize Money by Society . . .	£42 0
Department of Agriculture for Scotland	12 0
Cups	31 0
Total Prizes for Goats . .	**£85 0**

[See Note as to **EXTRA STOCK**, p. 140.]

---

[1] Given by the late Lord Dewar, London—to be competed for annually.

[2] Given by Mrs S. Macdonald—to be competed for annually.

*PIGS

LARGE WHITE

Judge: W. W. Ryman

(All Large White Pigs to be entered or eligible for entry in the Herd-Book of the National Pig-Breeders' Association)

Duke of York Champion Silver Medal for best Large White Pig

Entry Fees Members	Non-Members	Class		Premiums First £	Second £	Third £
15/-	25/-	148	**Boar** born before 1932	8	4	2
15/-	25/-	149	**Boar** born in 1932 before 1st July	8	4	2
15/-	25/-	150	**Boar** born in 1932 on or after 1st July	6	4	2
15/-	25/-	151	**Boar born in 1933**	6	3	1
15/-	25/-	152	**Sow born before** 1932	8	4	2
15/-	25/-	153	**Sow born in 1932** before 1st July	8	4	2
15/-	25/-	154	**Sow born in** 1932 on or after 1st July	6	4	2
15/-	25/-	155	**Sow born in 1933**	6	3	1

[1] **Dundee Citizens' Perpetual Silver Challenge Cup,** value about £50, for the best Large White Pig, "Extra Stock" eligible to compete.

[2] **Gold Medal,** value £5 (or cash), for best Large White Boar.

[2] **Gold Medal,** value £5 (or cash), for best Large White Sow.

Prize Money by Society	£95
[2] Contributed	5

---

* See Rule 35.

[1] This Cup has been presented by the citizens of Dundee to commemorate the holding of the Society's Annual Show at Dundee. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender same to the Society, and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive a Medal as a memento of his winning the Trophy

[2] Given by the National Pig-Breeders' Association.

PIGS

LARGE BLACK

Judge: G. A. Goodchild

Duke of York Champion Silver Medal for best Large Black Pig

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	PREMIUMS Second £	PREMIUMS Third £
15/-	25/-	156	**Boar** born before 1933	8	4	2
15/-	25/-	157	**Boar** born in 1933	6	3	1
15/-	25/-	158	**Sow** born before 1932	8	4	2
15/-	25/-	159	**Sow** born in 1932	8	4	2
15/-	25/-	160	**Sow** born in 1933	6	3	1

[1] **Silver Challenge Cup**, value 12 Guineas, for best Large Black Boar or Sow owned by an Exhibitor resident in Scotland, and to become the property of an Exhibitor winning it twice in succession or three times at intervals.

[1] **Silver Medal** for the best Large Black Boar.

[1] **Silver Medal** for the best Large Black Sow.

Prize Money by Society	£44
[1] Contributed Prizes	18

Prize Money by Society	£139	0
Contributed	23	0
Cups, Medals, &c.	72	12
Total Prizes for Pigs	£234	12

---

[1] Given by Large Black Pig Society.

EXTRA STOCK

(Former Winners not eligible for Ordinary Classes).

Former winners not eligible for Ordinary Classes may be exhibited as Extra Stock, and may receive Awards as follows: the Silver Medal, the Medium Silver Medal, and the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these Prizes permit.

While every endeavour will be made to see that former winners are correctly entered in the Catalogue as "Extra Stock," the Society accepts no responsibility for this, it being the duty of Exhibitors to state clearly on the Entry Form the Show at which the animal became disqualified for the Ordinary Classes. If an animal appears in the Catalogue as entered in an Ordinary Class which should appear as "Extra Stock," it cannot thereafter be transferred to the "Extra Stock" Section.

Entry Fees—same as corresponding Classes.

*POULTRY

Judges: David Reid, Classes 1 to 14, 28 to 50, and 78 to 89; James Garrow, Classes 15 to 21, 70 to 73, 90 to 106, and 123 to 127; J. H. Gilbert, Classes 22 to 27, 51 to 69, 74 to 77, and 107 to 122.

[1] **Champion Challenge Silver Salver,** value £30, for the best exhibit in the Poultry Classes.

First Premium—TWENTY SHILLINGS; *Second Premium*—TEN SHILLINGS. In each Class in which there are four or more entries a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Champion Silver Medals are offered as follows:—

1. Best Cock, any Variety.
2. Best Hen, any Variety.
3. Best Cockerel, any Variety.
4. Best Pullet, any Variety.
5. Best Waterfowl.
6. Best Turkey.
7. Best Utility Bird (Classes 94-106).

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 2s. 6d.; Non-Members, 4s.

	Class
LEGHORN—	
White	1. Cock
	2. Hen
	3. Cockerel
	4. Pullet
Exchequer	5. Cock or Cockerel
	6. Hen or Pullet
Any other Colour	7. Cock
	8. Hen
	9. Cockerel
	10. Pullet
MINORCA	11. Cock
	12. Hen
	13. Cockerel
	14. Pullet
HAMBURGH	15. Cock
	16. Hen
	17. Cockerel or Pullet
SCOTCH GREY	18. Cock
	19. Hen
	20. Cockerel
	21. Pullet
PLYMOUTH ROCK—	
Barred	22. Cock
	23. Hen
	24. Cockerel
	25. Pullet
Any other Colour	26. Cock or Cockerel
	27. Hen or Pullet

	Class
ORPINGTON—	
Black	28. Cock
	29. Hen
Any other Colour	30. Cock
	31. Hen
Any Colour	32. Cockerel or Pullet
WYANDOTTE—	
Gold or Silver	33. Cock
	34. Hen
	35. Cockerel
	36. Pullet
White	37. Cock
	38. Hen
	39. Cockerel
	40. Pullet
Partridge	41. Cock or Cockerel
	42. Hen or Pullet
Columbian	43. Cock or Cockerel
	44. Hen or Pullet
Any other Colour	45. Cock or Cockerel
	46. Hen or Pullet
RHODE ISLAND RED	47. Cock
	48. Hen
	49. Cockerel
	50. Pullet

---

[1] Given by the late Lord Dewar. The Salver will become the property of an exhibitor who shall win it three times, not necessarily in succession.

Special Entry Forms for Poultry Classes.

* See Regulations 66 and 67.

	Class
SUSSEX—	
Light	51. Cock
	52. Hen
	53. Cockerel
	54. Pullet
Any other Variety	55. Cock
	56. Hen
	57. Cockerel
	58. Pullet
DORKING—	
Coloured	59. Cock
	60. Hen
	61. Cockerel
	62. Pullet
Silver Grey	63. Cock
	64. Hen
	65. Cockerel
	66. Pullet
SCOTS DUMPY	67. Cock
	68. Hen
	69. Cockerel or Pullet
BARNEVELDER	70. Cock
	71. Hen
	72. Cockerel
	73. Pullet
INDIAN GAME	74. Cock
	75. Hen
	76. Cockerel
	77. Pullet
OLD ENGLISH GAME	78. Cock
	79. Hen
	80. Cockerel
	81. Pullet
BANTAM—	
Game—Old English	82. Cock
	83. Hen
Game—Modern	84. Cock
	85. Hen
Other than Game	86. Cock
	87. Hen
Any Variety	88. Cockerel
	89. Pullet
ANY OTHER RECOGNISED BREED OF POULTRY	90. Cock
	91. Hen
	92. Cockerel
	93. Pullet

	Class
UTILITY POULTRY—	
Leghorn—any Variety	94. Cock or Cockerel
Any other Variety—light breed	95. Cock or Cockerel
Wyandotte—any Colour	96. Cock or Cockerel
Any other Variety—heavy breed	97. Cock or Cockerel
Leghorn—White	98. Hen or Pullet
Leghorn—any other Colour	99. Hen or Pullet
Wyandotte—any Colour	100. Hen or Pullet
Rhode Island Red	101. Hen or Pullet
Barnevelder	102. Hen or Pullet
Rock—any Colour	103. Hen or Pullet
Any other Variety	104. Hen or Pullet
ANY CROSS FOR LAYING PURPOSES	105. Hen
ANY CROSS FOR LAYING PURPOSES	106. Pullet
DUCKS—	
Aylesbury	107. Drake
	108. Duck
	109. Drake (young)
	110. Duck (young)
Orpington	111. Drake
	112. Duck
	113. Drake (young)
	114. Duck (young)
Indian Runner	115. Drake
	116. Duck
Any other Variety	117. Drake
	118. Duck
GEESE	119. Gander
	120. Goose
TURKEYS	121. Cock
	122. Hen
TABLE POULTRY—	
Any pure Breed	123. Cock
	124. Cockerel
Any Cross	125. Cock
	126. Cockerel
Any Pure Breed or Cross	127. Pair of Pullets

AMOUNT OF POULTRY PREMIUMS, £222, 5s.

Special Entry Forms for Poultry Classes.

* DAIRY PRODUCE

Judge : Robert H. Lawson

No Exhibitor to show more than one lot in any Class

Entry Fees—Members, 5s. ; Non-Members, 7s. 6d.

Class.	Premiums. 1st. £	2nd. £	3rd. £	4th. £	5th. £
1. Powdered Butter, not less than 3 lb.	4	3	2	1	-
2. Fresh Butter, three 1-lb. lots, to be made up in form of bricks	4	3	2	1	-
3. Cheddar Cheese, 56 lb. and upwards	9	5	3	2	1
4. Cheese, 14 lb. and under	5	3	2	1	-
Total			£51		

Special Entry Forms for Dairy Produce.

* See Regulations 75 and 76.

Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 108.

EGGS

Judge : Alexander F. Smith

Entry Fee—2s. 6d.

Class.	Premiums. 1st.	2nd.	3rd.
1. One dozen Hen Eggs—white	£1	15/-	10/-
2. One dozen Hen Eggs—brown or tinted	£1	15/-	10/-
3. One dozen Duck Eggs	£1	15/-	10/-
4. One dozen Turkey Eggs	£1	15/-	10/-

PRIZE MONEY BY SOCIETY, £9.

Special Entry Forms for Eggs.

REGULATIONS.

1. All eggs must be fresh, and must be the produce of poultry the property of the exhibitor.

2. Eggs will be received at the Dairy Produce Shed in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday,

3. Eggs will be exhibited on suitable plates provided by the Society.

4. Eggs may be removed by exhibitors at the close of the Show ; where this is not done eggs will be returned only if a suitable box is provided for the purpose and the necessary postage or carriage thereon is prepaid.

FUR-PRODUCING RABBITS

(*To be judged at* 10 A.M. *on Wednesday,* 21*st June*)

Judge : James Garrow

Entry Fee—2s. 6d. each rabbit.

REGULATIONS.

Rabbits must be brought to the Showyard between 5 P.M. and 9 P.M. on Tuesday, the first day of the Show. No lot will be admitted without an Admission Order. Pens, food, and attendance will be found by the Society.

Rabbits may be penned on Tuesday evening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Rabbits, they will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

On the Wednesday, the second day of the Show, the Rabbit Shed will be closed to the public during the Judging. On the last day of the Show the Rabbit Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show,* given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Rabbit Shed at 5 P.M. to remove the Rabbits.

Champion Silver Medal for best exhibit in the Rabbit Classes.

First Premium—FIFTEEN SHILLINGS; *Second Premium*—TEN SHILLINGS; *Third Premium*—FIVE SHILLINGS. In each Class in which there are less than four entries the Third Prize of Five Shillings will not be awarded; where there are ten or more entries a Fourth Prize of 2s. 6d. may be awarded. In addition to the Premiums, the Judges may award *one* Very Highly Commended, *one* Highly Commended, and as many Commended tickets in each Class as they consider justified by the number and merit of the entries.

Class.
1. Angora, over 5 months.
2. Angora, not exceeding 5 months.
3. Chinchilla, Buck, over 5 months.
4. Chinchilla, Doe, over 5 months.
5. Chinchilla, Buck or Doe, not exceeding 5 months.
6. Beveren, over 5 months.
7. Beveren, not exceeding 5 months.
8. Rex, any colour, over 5 months.
9. Rex, any colour, not exceeding 5 months.
10. Havana, over 5 months.

Class.
11. Sable Marten, over 5 months.
12. Sable Marten, not exceeding 5 months.
13. Sable Siamese, over 5 months.
14. Sable Siamese, not exceeding 5 months.
15. Squirrel, over 5 months.
16. Silver Fox, any colour, over 5 months.
17. Silver Fox, any colour, not exceeding 5 months.
18. Any variety, over 5 months, for which a class is not provided.
19. Any variety, not exceeding 5 months, for which a class is not provided.

PRIZE MONEY BY SOCIETY . . . . £30, 17s. 6d.

Special Entry Forms for Rabbit Classes.

HONEY, &c.

Judge: Joseph Tinsley

(*To be judged at* 11 A.M. *on Tuesday*, 20*th June*)

OPEN CLASSES

Entry Fees—2s. 6d. each.

Class.		Premiums. 1st.	2nd.	3rd.
1.	Collection of Appliances suitable for a beginner's outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit	20/-	15/-	10/-
2.	Best and most complete Frame Hive for general use, with any improvements. Unpainted	20/-	15/-	10/-
3.	Best and most complete Hive. Unpainted. Price not to exceed 35/-	20/-	15/-	10/-
4	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
5.	Six Sections of Heather Honey	20/-	15/-	10/-
6.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	20/-	15/-	10/-
7.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	20/-	15/-	10/-
8.	Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.	20/-	15/-	10/-
9.	Six Jars of Granulated Honey, approximate weight 6 lb.	20/-	15/-	10/-
10.	Two shallow Frames of Comb Honey for extracting purposes	20/-	15/-	10/-
11.	Best display of Honey in any form suitable for a shop window in space 4 feet by 4 feet. Weight of honey not to exceed 40 lb.	60/-	30/-	20/-
12.	Best exhibit of not less than 1 lb. of Wax in any form	20/-	15/-	10/-
13.	Best exhibit of not less than 1 lb. of Wax made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration	20/-	15/-	10/-
14.	Observatory Hive with Queen and Bees—two or more frames	50/-	30/-	20/-
15.	Observatory Hive with Queen and Bees—one frame, no super	40/-	30/-	15/-

(Confined to Scottish Exhibitors.)

16.	One Standard Frame of Comb Honey for extracting purposes	20/-	15/-	10/-
17.	Six Sections of Comb Honey, excluding Heather Honey	20/-	15/-	10/-
18.	Six Sections of Heather Honey	30/-	20/-	10/-
19.	Six Jars of Run or Extracted Medium or Dark-coloured Honey, excluding Heather Honey, approximate weight 6 lb.	30/-	20/-	10/-
20.	Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.	20/-	15/-	10/-
21.	Six Jars of Run or Extracted Light-coloured Honey, approximate weight 6 lb.	30/-	20/-	10/-
22.	Mead, made from Honey	20/-	15/-	10/-

Silver and Bronze Medals will be awarded by the Scottish Bee-Keepers' Association to the First and Second winners of the greatest number of points in the Classes for Honey and Wax only, calculated on the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point.

PRIZE MONEY BY SOCIETY	£48, 4s. 0d.
CONTRIBUTED BY SCOTTISH BEE-KEEPERS' ASSOCIATION .	£10, 10s. 0d.
CONTRIBUTED BY MR JAMES CONEGHAN FOR CLASS 22 .	£1, 1s. 0d.

Special Entry Forms for Appliances and Honey.

RULES AND REGULATIONS.

1. All exhibits must be despatched in time to be delivered at the Showyard not later than 6 P.M. on Monday, the day before the opening of the Show. According to the railway regulations, exhibitors will require to pay return carriage and cartage when despatching. Return carriage-paid labels will be supplied by the Secretary, and must be addressed for the return journey, and have numbers of Classes on same. Non-compliance with this regulation will mean that the exhibit will be left in the Showyard. **Boxes containing hives, jars, or sections must be *screwed* and not nailed, and the hives, bottles, and sections so placed that they can be lifted out and replaced without disturbing the packing.**

2. The number of the exhibit will be sent by the Secretary (as entered on the printed slip) and must be placed on every exhibit—viz., **Jars:** on side of jar about half an inch from the foot. **Sections** and **Frames:** at right top corner of the glass. **Wax:** at right top corner of the glass. Also on **1 lb. Cakes:** on the underside. No goods will be staged unless this rule is complied with. All competitors must leave the Bee Shed by 9 A.M. on Tuesday morning.

3. No card, trade mark, or name of the exhibitor may be placed upon any part of an exhibit. Every article exhibited must be the property of the exhibitor, and all honey must have been gathered in the natural way within Great Britain, Northern Ireland, and Irish Free State, by bees the property of the exhibitor.

4. Comb Honey Sections, 4¼ inches by 4¼ inches, to be staged in cardboard boxes glazed on both sides, showing not less than 3½ inches by 3½ inches of comb surface clear of points of lacing. Sections with fixed glass will be disqualified.

Shallow Frames,—no paper edging is permissible and each frame must be exhibited in a separate glazed case.

5. All Run, Extracted, and Granulated Honey must be shown in the usual mercantile Glass Jars holding approximately 1 lb., except in Class 11.

6. No exhibitor shall be allowed to take more than one prize in any one class.

7. The Judge shall be empowered to withhold prizes in case of insufficient merit.

8. Should there be in any class three or less than three entries, the value of the first prize may be reduced at the discretion of the Judge to that of the second, the second to that of the third, and no third prize will be awarded.

9. The Judge will commence his inspection at 11 A.M. on Tuesday, and the Bee Shed will be closed to the public during the judging.

10. Exhibits of Honey may be placed in their positions in the shed before the opening and removed at the close of the Show by exhibitors themselves or their representatives. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove the exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective exhibitors.

11. No lot can be removed from the yard till 4 P.M. on Friday, the last day of the Show.

12. The Society undertakes no responsibility for the receipt or despatch of exhibits, nor for any injury exhibits may sustain during the Show or otherwise.

13. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 108.**

BUTTERMAKING COMPETITIONS

Judges: *Open and Novice Sections*—William M'Fadzean.
Championship—William Burkitt.

Entry Fee, 2s. 6d. each Competition.

The Society will hold an open Buttermaking Competition on Wednesday and Thursday, 21st and 22nd June, and a Novice Competition on Friday, 23rd June.

The Competitors will be balloted into sections containing, as nearly as possible, an equal number of Competitors, and each section will form a separate competition with separate prizes. The Secretary will forward to Competitors, a few days before the Competitions, a note of the days and hours at which they are required to attend.

The sections and prize money will be as follows :—

WEDNESDAY, 21st June.

Open Competition.

Section 1	£5, £3, £2, £1.
Section 2	£5, £3, £2, £1.

THURSDAY, 22nd June.

Open Competition (continued).

Section 3	£5, £3, £2, £1.
Championship	*First :* Gold Medal. *Second :* Silver Medal.

Competitors in the Championship Competition will consist of the First, Second, and Third Prize Winners in each of the Sections 1 to 3 inclusive.

FRIDAY, 23rd June.

Novice Competition (confined to Competitors who have never won a prize of greater value than £2 in Buttermaking Competitions)—

Section 1	£3, £2, £1.

Competitors will be distinguished by Numbers, which, with Competitor's name and address, will appear in the Catalogue.

The decision of the Directors of the Society in all matters relating to the Competition shall be final.

Entry forms may be obtained from the Secretary, or from Miss J. Macdonald, Hon. Secretary, British Dairymaids' Association, 16 Rutland Square, Edinburgh, who has kindly agreed to receive entries. These must be lodged *not later than Thursday, 25th May.*

Prize Money by Society, £39.

RURAL INDUSTRIES

Judges : Miss Bruce, Classes 1, 2, 3, 4, 5, 6, 7, 8, 9, 19, 21, and 22 ; Miss A. D. Angus and Miss I. M. Barnet, Classes 10, 11, 12, 13, 20, and 24 ; Miss M. B. Fulton, Classes 14, 15, 17, 18, 23, and 25 ; Mrs E. Balfour Graham, Class 16.

Entry Fee, 2s. 6d. each article.

OPEN CLASSES.

SHETLAND KNITTING.

Class.	*Exhibits to be made from Shetland Wool.*	Premiums. 1st.	2nd.	3rd.
1.	Fine Lace Shawl or Scarf	£3	£2	£1
2.	Fine Lace Goods other than above, *e.g.*, Bed-jackets, Lace Spencers, &c.	3	2	1
3.	Jumper or Cardigan—with or without sleeves . .	3	2	1
4.	Dress or Costume	3	2	1
5.	Exhibits other than above	2	1	10/-
	(Separate entry for each article.)			

TWEEDS.

6.	Harris or other Tweed—Hand-woven	3	2	1
7.	Tartan—Vegetable-dyed and Hand-woven . .	3	2	1
8.	Carriage Rug or Plaid—Hand-woven . . .	3	2	1

MISCELLANEOUS.

9.	Hand-made Floor Rug (wool)	3	2	1
10.	Specimen of Embroidery—white (to be exhibited unwashed)	3	2	1
11.	Specimen of Coloured Embroidery—silk or cotton .	3	2	1
12.	Specimen of Coloured Embroidery—woolwork . .	3	2	1
13.	Specimen of Old English Quilting	3	2	1
14.	Leather Gloves	2	1	10/-
15.	Specimen of Leather Work other than Gloves . .	2	1	10/-
16.	„ Furcraft	2	1	10/
17.	„ Hand-painted Pottery . . .	2	1	10/-
18.	„ Basket Work (Raffia not eligible) . .	2	1	10/-
19.	Home-spun Yarn—2-3 cuts	2	1	10/-
20.	Specimen of Hand-made Lace	3	2	1
				£102 10

RURAL INDUSTRIES—*continued.*

CONFINED CLASSES.

Open to Women's Rural Institutes and Members thereof in the whole of Scotland.

		Premiums.			
		1st.	2nd.	3rd.	
21.	Men's Golf or Kilt Hose	£2	£1	10/-	
22.	Floor Rug in Jute	3	2	1	
23.	Soft Toy	2	1	10/-	
24.	Specimen of Italian Quilting	3	2	1	
25.	Upholstered Box	2	1	10/-	
					£22 10
	Prize Money by Society	£125	0		

Note.—(*a*) No exhibit may be entered in more than one Class.
(*b*) All exhibits must have been completed within the twelve months preceding the Show.

REGULATIONS.

1. The Competition, except where otherwise stated, is open to competitors from all parts of Great Britain, Northern Ireland, and Irish Free State. Societies or Institutes, as well as individuals, shall be allowed to compete.

2. Every exhibit must be the work either of the exhibitor or of a member of the exhibiting Society or Institute, and must have been completed within the twelve months preceding the Show.

3. An entry fee of 2s. 6d. for each exhibit is payable at the time of entry.

4. Exhibits will be received in the Showyard not later than 8 P.M. on Monday, the day before the opening of the Show. Judging will commence at 9.30 A.M. on Tuesday. The section will be closed to the public during the judging. Exhibits shall not be removed till after the close of the Show.

5. In no case shall a prize be awarded unless the Judge deems the exhibit to have sufficient merit; and where only one or two articles are entered in a class, and the Judge considers them unworthy of the prizes offered, it shall be in his or her power to award a lower prize.

6. Exhibits shall be entirely at the risk of exhibitors, who shall be solely responsible for delivery and removal of their own exhibits. In the event of neither the exhibitor nor a person with written authority from the exhibitor being present to place or remove exhibits, these will be placed and removed by men hired and paid by the Society; but this will be done on the understanding that the men are hired to do the work on behalf of the exhibitors and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. A receipt signed by the exhibitor, on a form to be issued by the Secretary, must be delivered before any exhibit is handed over to the exhibitor or his or her representative.

On the last day of the Show the Shed will be closed to the public at 4-45 P.M., but no exhibit may be removed until 5 P.M.

7. Exhibitors shall be allowed to attach to their exhibits a notice indicating where (in the Showyard or elsewhere) similar articles may be purchased.

8. Exhibits must not be sent to the Society's Office previous to date of Show. Labels, &c., will be posted to Exhibitors about fourteen days prior to the Show.

9. All exhibits to be sent to the Showyard in packing, sufficiently strong, to be used for return.

10. **Railway delivery charges from station to Showyard and back to be paid by exhibitor. See p. 108.**

Special Entry Forms for Rural Industries Section.

HORSE-SHOEING AND SHOE-MAKING

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Irish Free State.

Horses provided for this Competition cannot be entered in any other Class.

Special Entry Forms for Horse-Shoeing and Shoe-Making Competitions.

HORSE-SHOEING COMPETITION

Judges: John Brown, M.R.C.V.S.; James Hall; John Ritchie.

THURSDAY, 22ND JUNE.

Class 1.—FARM HORSES (Open Class).

1st Prize, £5 and Gold Watch.*
2nd Prize, £5 and Canteen of Cutlery.†
3rd Prize, £5 and Gold Medal.‡
4th Prize, £4 and Gold Medal.§
5th Prize, £3.
6th Prize, £2.
7th Prize, £2.
8th Prize, £1.
9th Prize, £1.

FRIDAY, 23RD JUNE.

Class 2.—FARM HORSES (For Competitors under Twenty-five Years of Age).

1st Prize, £5 and Silver Tea Service.**
2nd Prize, £3 and Canteen of Cutlery.†
3rd Prize, £2 and Gold Medal.‡
4th Prize, £1.

* Gold Watch given by Messrs William Martin, Sons, & Co., Coatbridge.
** Silver Tea Service given by the Scottish Iron and Steel Co., Ltd., Glasgow.
† Canteens of Cutlery given by Messrs Neilson & Cleland, Ltd., Coatbridge.
‡ Gold Medals given by the Mustad Horse Nail Company.
§ Gold Medal given by Capewell Horse Nail Company.

Gold Medal, given by National Master Farriers' and Blacksmiths' Association, to be awarded to the competitor obtaining the highest number of points in Class 1.

Prize Money by Society	£24
Silver Tea Service and £10 by The Scottish Iron & Steel Co., Ltd., Glasgow	£15
Gold Watch and £5 by Messrs William Martin, Sons, & Co., Coatbridge	£10
Cutlery by Messrs Neilson & Cleland, Ltd., Coatbridge	£8
Gold Medal by National Master Farriers' and Blacksmiths' Association	£4
Gold Medals by Mustad Horse Nail Co. . .	£4
Gold Medal by Capewell Horse Nail Co. . .	£2

1. **Entries must be made with the Secretary not later than 3rd May. Entry Fee, 2s. 6d. for each Class. Entry Forms may be had on application.**

2. Competitors eligible to compete in the Junior Class may compete in either Senior or Junior Class, but not in both.

3. The Competition will take place in the Showyard, and will be decided by points, time being taken into consideration. Each Competitor must make and fix one fore and one hind shoe, having previously taken off the old shoes. The shoes must be fullered, with low calkins, and with toe-pieces on hind shoes only. The use of files and wire brushes is not permitted. Each Competitor must bring his own tools, nails, and a striker. The striker will not be allowed to touch the horse's hoof. The local Blacksmiths' and Farriers' Association will provide forges and anvils. The horses to be shod will be provided by the Association. Forges and horses will be balloted for.

4. Competitors must attend at the Horse-Shoeing Stance and answer to their names **half an hour before they are due to compete.**

5. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

The Dundyvan horse-shoe iron to be used in the Open Class, and the Waverley horse shoe iron to be used in the Junior Class, will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge, who will also provide the necessary smithy coal.

SHOE-MAKING COMPETITION

Judges: James Hall; John Ritchie.

WEDNESDAY, 21st June.

1st Prize, £5; 2nd Prize, £4; 3rd Prize, £3; 4th Prize, £2;
5th Prize, £1.

Prize Money by Society	£8
Messrs William Martin, Sons, & Co., Coatbridge .	£5
Messrs Neilson & Cleland, Ltd., Coatbridge .	£2

REGULATIONS.

1. Entries must be made with the Secretary not later than 3rd May. Entry Fee, 2s. 6d. each entry. Entry Forms may be had on application.

2. Each Competitor must make one fore shoe and one hind shoe.

3. Each shoe must be made from $18\frac{1}{2}'' \times 1\frac{1}{4}'' \times \frac{9}{16}''$ iron, which will be provided at the Stance.

4. The fore shoe to be fullered and clipped, and the hind shoe fullered, clipped, and toed.

5. The use of files and wire brushes is prohibited.

6. Time allowed will be limited to 40 minutes.

7. Competitors must bring their own tools and a striker, and must attend at Horse-Shoeing Stance **15 minutes before they are due to commence.**

8. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

Dundyvan and Waverley horse-shoe iron will be supplied by Messrs Neilson & Cleland, Ltd., Coatbridge.

LIVE STOCK JUDGING COMPETITION

Special Entry Forms for Live Stock Judging Competition.

1. The Society will hold a Live Stock Judging Competition on Wednesday, 21st June, commencing at 10 A.M.

2. The Competition shall be open to all persons not exceeding 23 years of age at the date of the Competition.

3. Teams from Agricultural Colleges or from Young Farmers' Clubs in Scotland shall be allowed to compete. The members of these teams shall also enter as individual Competitors. Five members shall form a team.

4. Entries must be lodged with the Secretary of the Highland and Agricultural Society not later than 10 A.M. on **Thursday, 18th May.** An entry fee of 2s. 6d. shall be paid by each Competitor. Entries of teams must be made in the same way, but no additional fee shall be charged for a Team over and above the fee of 2s. 6d. for each individual member.

5. The Stock to be judged shall consist of—

(*a*) Cattle (three classes) . .	Shorthorn. Aberdeen-Angus. Ayrshire or British Friesian.
(*b*) Horses (two classes) . .	Clydesdales.
(*c*) Sheep (three classes) .	Blackface. Cheviot. Border Leicester.

There will be four animals in each class. The animals to be judged shall be chosen by the Society's Stewards. The Society reserves the right to modify the nature of the classes should difficulty arise in finding suitable material amongst the animals exhibited at the Show.

6. In Judging, breed type shall be taken into account. All stock shall be considered free from acquired blemishes or unsoundness. The Competitors shall judge in groups, and ten minutes shall be allowed for the judging of each class.

7. Competitors are forbidden to discuss the Stock with each other, or with any other person, until the conclusion of the whole Competition.

8. The method of awarding points shall be decided by the Directors of the Society, and their decision in all matters relating to the Competition shall be final.

9. Prizes shall be awarded as follows :—

Individual Competition . . .	£5, £4, £3, £2, £1.
Team Competition—	
1st	£10 and 5 Medium Silver Medals.
2nd	£5 and 5 Medium Bronze Medals.
Special Prize for College team placed highest in Competition . .	£5.

[1] **'Glasgow Herald' Challenge Cup**, value £50, to be awarded each year to the team winning the First Prize in the Team Competition.

[1] **Gold Medal** to be awarded to the highest individual scorer.

The Society reserves the right to reduce the number of prizes in the event of there being less than twenty Competitors in the individual Competition and less than three teams in the Team Competition.

---

[1] Given by Messrs George Outram & Co., Ltd., Glasgow.

ABSTRACT OF PREMIUMS.

GIVEN BY THE SOCIETY.

Duke of York Silver Champion Medals	£72	10	0
Cattle	1366	0	0
Horses	932	0	0
Jumping Competitions	207	0	0
Sheep	576	0	0
Goats	42	0	0
Pigs	139	0	0
Poultry	222	5	0
Dairy Produce	51	0	0
Eggs	9	0	0
Fur-Producing Rabbits	30	17	6
Honey, &c.	48	4	0
Buttermaking Competitions	39	0	0
Rural Industries	125	0	0
Horse-Shoeing and Shoe-Making	32	0	0
Stock Judging Competition	35	0	0
Medals to Breeders, &c.	50	0	0
Horticultural—Gold Medals	50	0	0
Forestry [1]	40	0	0
	£4066	16	6

CONTRIBUTED PRIZES, CUPS, &c.

CATTLE.

*The late Mr William Duthie—Silver Cup	£150	0	0			
*Mr Emilio R. Casares, jun., London—Cup	50	0	0			
Tweeddale Gold Medal	25	0	0			
The Shorthorn Society (and 2 Medals)	40	0	0			
*Angus Agricultural Society—Silver Cup	52	10	0			
*Mr W. Gilchrist Macbeth—Silver Cup	50	0	0			
*The late Sir George Macpherson Grant, Bart.—Silver Cup	50	0	0			
*Mr Eduardo Estanguet, Argentina—Silver Cup	52	10	0			
*The late Sir John Macpherson Grant, Bart.—Silver Cup	50	0	0			
*Mr Falconer L. Wallace—Silver Cup	50	0	0			
Aberdeen-Angus Cattle Society—Gold Medal	10	0	0			
*Galloway Cattle Society—Dr Gillespie Memorial Trophy	50	0	0			
*Galloway Cattle Society—Silver Cup	50	0	0			
*Mrs Brown, Kirkbrex, Glasgow—Knockbrex Challenge Cup	50	0	0			
*General Sir Ian Hamilton, G.C.B.—Silver Cup	50	0	0			
*Highland Cattle Society of Scotland—Silver Cups	89	5	0			
*Dundee Citizens' Perpetual Silver Challenge Cup	50	0	0			
*Cowhill Champion Cup	30	0	0			
Ayrshire Cattle Herd-Book Society	20	0	0			
*British Friesian Cattle Society—Silver Cup	52	10	0			
British Friesian Cattle Society	50	0	0			
*Lady Rachel Workman MacRobert—Champion Silver Bell	52	10	0			
*The late Lt.-Colonel Charles Brook—Kinmount Challenge Cup	50	0	0			
Red Poll Cattle Society	20	0	0			
Messrs Brown & Polson, Ltd.	10	0	0			
Messrs William MacKean, Ltd.	10	0	0			
*Corporation of Edinburgh Perpetual Gold Challenge Cup	100	0	0			
Dr T. G. Nasmyth—Gold Medal	10	10	0			
				1324	15	0
Carry forward				£5391	11	6

---

[1] Grant to Royal Scottish Forestry Society for Forestry Section.

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward . . . £5391 11 6

HORSES.

*Paisley Perpetual Gold Challenge Cup	£300 0 0	
*Clydesdale Horse Society—Cawdor Challenge Cups	105 0 0	
"William Taylor" Memorial Committee	10 0 0	
*Mr William Meiklem, Kirkcaldy—Gold Challenge Cup	115 10 0	
Suffolk Horse Society	10 0 0	
*Dumfriesshire Hunt, Dumfries Centenary Silver Challenge Cup	100 0 0	
Hunters' Improvement and National Light Horse Breeding Society—Gold Medal	5 0 0	
Department of Agriculture for Scotland	40 0 0	
The Highland Pony Society	16 0 0	
*Fife and Kinross Perpetual Gold Challenge Cup	200 0 0	
"Four Lovers of the Breed" (Shetland Ponies)	10 0 0	
Shetland Pony Stud-Book Society (Medal).		
		911 10 0

SHEEP.

*Renfrewshire Perpetual Gold Challenge Cup	£250 0 0	
"James Archibald" Prize	20 0 0	
*Cheviot Sheep Society—Borthwick Challenge Cup	25 0 0	
Society of Border Leicester Sheep Breeders—Gold Medals	20 0 0	
*Challenge Bowl for Oxford Down Sheep	50 0 0	
Oxford Down Sheep-Breeders' Association	11 0 0	
*Suffolk Sheep Society—Silver Cup	15 0 0	
Dorset Horn Sheep-Breeders' Association	5 0 0	
		396 0 0

GOATS.

Department of Agriculture for Scotland	£12 0 0	
*The late Lord Dewar—Silver Cup	21 0 0	
*Mrs S. Macdonald—Silver Cup	10 0 0	
		43 0 0

PIGS.

*Dundee Citizens' Perpetual Silver Challenge Cup	£50 0 0	
National Pig-Breeders' Association—Gold Medals and Prize Money	15 0 0	
*Large Black Pig Society—Silver Cup	12 12 0	
Large Black Pig Society (and 2 Medals)	18 0 0	
		95 12 0

POULTRY.

*The late Lord Dewar—Champion Challenge Silver Salver		30 0 0

HONEY.

The Scottish Bee-Keepers' Association (and 2 Medals)	£10 10 0	
James Coneghan	1 1 0	
		11 11 0

Carry forward £6879 4 6

* Challenge Prizes.

ABSTRACT OF PREMIUMS—*continued*

Brought forward . . .		£6879 4 6
HORSE-SHOEING AND SHOE-MAKING.		
Messrs W. Martin, Sons, & Co., Coatbridge (Gold Watch and £10)	£15 0 0	
The Scottish Iron & Steel Co., Ltd., Glasgow (Silver Tea Service and £10)	15 0 0	
Messrs Neilson & Cleland, Limited, Coatbridge (Cutlery, &c.)	10 0 0	
National Master Farriers' and Blacksmiths' Association (Gold Medal)	4 0 0	
Mustad Horse Nail Co. (2 Gold Medals) . . .	4 0 0	
Capewell Horse Nail Co. (Gold Medal) . . .	2 0 0	
		50 0 0
STOCK JUDGING COMPETITION.		
*Messrs George Outram & Co., Ltd., Glasgow—'Glasgow Herald' Challenge Cup (and Gold Medal)		50 0 0
		£6979 4

* Challenge Prizes.

JOHN STIRTON, *Secretary.*

8 EGLINTON CRESCENT,
EDINBURGH 12. *February* 1933.

FORESTRY EXHIBITION.

For information as to above, apply to the Secretary Royal Scottish Forestry Society, 8 Rutland Square, Edinburgh.

The Society's Show for 1934 will be held at Glasgow.

INDEX.

Abstract of Accounts, 378.
Accounts—see Finance.
Agricultural Depression: Motion by Colonel F. J. Carruthers submitted and approved, 399; Proceedings in regard to, 402, 422.
Agricultural Education: Regulations and Syllabus, Appendix, 16.
Agricultural Examinations for 1933, Date of, Appendix, 15, 18, 29.
Agricultural Research in Scotland in 1932: Institute of Animal Genetics, University of Edinburgh, 136; Animal Diseases Research Association, 140; Rowett Research Institute, 142; Scottish Plant Breeding Station, 144; West of Scotland Agricultural College, 146; Hannah Dairy Research Institute, 150; Macaulay Institute for Soil Research, 151.
Agricultural Statistics, 227.
Analyses for Members during 1932, by Dr J. F. Tocher, 181.
Animal Diseases Research Association: Grant of £200 recommended, 389; Confirmed, 392; Approved, 412.
Archibald Prize, James, Proceedings in regard to, 393, 399, 406.
Argyll Naval Fund: Accounts, 382; C. D. Madden appointed a beneficiary, 408; Report to General Meeting, 420.
Aspects of Recent Pasture Research, Some Practical, by Arthur Crichton, M.A., B.Sc., 103.

Barley, Price of, for 1932, 241.
Botanical Department, Appendix, 58.
Buttar, Thomas A., Death of, 409.
Bye-Laws, Revision of, Proceedings in regard to, 387

Cattle Feeding: Relative values of Swedes, Potatoes, Dried Sugar Beet Pulp and Silage in Beef Production, by Principal W. G. R. Paterson, B.Sc., N.D.A.(Hons.), 23.
Cereal and other Crops of Scotland for 1932, 188.
Chairman of Board, Alexander Murdoch, East Hallside, re-elected, 395.
Chemical Department, Appendix, 47.
Child, The Education of the Rural, by Professor E. Shearer, M.A., B.Sc., 81.
Chillingham Park Wild Cattle, Proceedings in regard to, 389.
Chlorates in Weed Control, The Use of, by D. Clouston, M.A., B.Sc., and A. Hill, B.Sc., B.Sc.(Agric.), 128.
Clouston, D., M.A., B.Sc., and A. Hill, B.Sc., B.Sc.(Agric.), The Use of Chlorates in Weed Control, 128.
Clubs, Young Farmers', by W. J. Grant, M.A., B.Sc., 88.
Colorado Beetle, Proceedings in regard to, 389.
Committees for 1932-33, Appendix, 8.
Compensation: Table showing the value of Feeding-stuffs as Manure per ton, Appendix, 55.
Conference, Ottawa, Proceedings in regard to, 392.
Consulting Veterinary Surgeon: Motion by the Hon. T. G. P. Corbett submitted, 402; Not approved, 408.
Control of the Sheep Tick on Hill Pastures, by J. Macleod, B.Sc., Ph.D., 114.
Cottages and Gardens: Regulations and Premiums offered in 1933, Appendix, 82.
Council of Agriculture for England and Wales: Mr W. P. Gilmour nominated, 404.
Craibstone, Some Field Experiments at, by Professor James Hendrick, B.Sc., F.I.C., 1.
Crichton, Arthur, M.A., B.Sc., Some Practical Aspects of Recent Pasture Research, 103.
Crichton, J., M.A., B.Sc., F.R.S.E., The Weather of Scotland in 1932, 214.
Crops of Scotland for 1932, 188.

Dairy Department: Regulations and Syllabus of Examination, Appendix, 26.
Dairy Examination for 1933, Date of, Appendix, 15, 29.
Damage by Trespass, Proceedings in regard to, 396, 410.

Date of Annual Show: Discussion at General Meeting in Inverness Show-yard, 418.

Deaths of—
  George Will, 394; Duke of Roxburghe, K.T., 394; Colonel R. F. Dudgeon, C.B., 395; John Murray, 395; Major Wellwood Maxwell, 406; Lord Lovat, K.T., K.C.M.G., 408; Thomas A. Buttar, 409.

Depression, Agricultural: Motion by Colonel F. J. Carruthers submitted and approved, 399; Proceedings in regard to, 402, 422.

Directors for 1932-33, Appendix, 6.

Directors, Representatives on other Bodies, Appendix, 13.

Discolouration of Wool: Proceedings in regard to, 386, 388; Report on Conference with Sheep Breed Societies, 401; Report to General Meeting, 413.

District Competitions: Awards in 1932, 374; Premiums offered in 1933, Appendix, 61; Report to General Meeting, 421.

Double Dipping Regulations, Proceedings in regard to, 399, 402.

Dudgeon, Colonel R. F., C.B., of Cargen, Death of, 395.

Duke and Duchess of York to visit Dundee Show, 409.

Dundee Show, 1933: Proceedings in regard to, 386, 387, 396, 398, 400, 403, 404, 407, 409; Reports to General Meetings, 412, 420, 421; Premiums offered at, Appendix, 89.

Edinburgh, Corn Market Grain Tables for 1932, 241.

Education Committee, Proceedings of, 386.

Education of the Rural Child, The, by Professor E. Shearer, M.A., B.Sc., 81.

Entomological Department, Appendix, 60.

Essays and Reports, Appendix, 61.

Establishment for 1932-33, Appendix, 6.

Examinations, Dates of, Appendix, 15, 18, 29.

Experiments at Craibstone, Some Field, by Professor James Hendrick, B.Sc., F.I.C., 1.

Farmers' Clubs, Young, by W. J. Grant, M.A., B.Sc., 88.

Feeding Cattle: Relative Values of Swedes, Potatoes, Dried Sugar Beet Pulp and Silage in Beef Production, by Principal W. G. R. Paterson, B.Sc., N.D.A.(Hons.), 23.

Feeding-stuffs, Table showing the value of, as Manure per ton, Appendix, 55.

Field Experiments at Craibstone, Some, by Professor James Hendrick, B.Sc., F.I.C., 1.

Finance: Accounts for 1931-32, 376; Proceedings in regard to, 387, 389, 393, 399, 403, 406; Reports to General Meetings, 412, 420.

Foot and Mouth Disease: Proceedings in regard to, 387, 388, 390, 391, 392, 396, 397, 398; Report to General Meeting, 413.

Forestry Department: Regulations and Syllabus of Examination, Appendix, 36.

Forestry Examination, 1932, Report of, 386.

Funds, State of the, 376.

General Meetings, 411, 414, 420.

Glasgow Show, 1934: Invitation to hold Show in Glasgow, 385; Accepted, 387, 388; Reports to General Meetings, 413, 421.

Glasgow Veterinary College, Grant of £100 recommended, 389; Confirmed, 392; Approved, 412; Thanks of, 396.

Grain, Prices of, for 1932, in Edinburgh Corn Market, 241.

Grant, W. J., M.A., B.Sc., Young Farmers' Clubs, 88.

Grants to Local Societies, 421.

Henderson, William, nominated as a Director, 385; Elected, 411.

Hendrick, Professor James, B.Sc., F.I.C., Some Field Experiments at Craibstone, 1.

Highland and Agricultural Society: Proceedings, 385; Constitution, Appendix, 3; Privileges of Members, Appendix, 4; Establishment, Appendix, 6; Meetings, Appendix, 14.

Highland Reel and Strathspey Society, Grant of £30, 393, 412.

Hill, A., B.Sc., B.Sc.(Agric.), and D. Clouston, M.A., B.Sc., The Use of Chlorates in Weed Control, 128.

Hill Pastures, Control of the Sheep Tick on, by J. Macleod, B.Sc., Ph.D., 114.

Hoeing Competitions, Regulations for, Appendix, 86.

Hundredth Show, Edinburgh, 1931: Alterations in Prize List, 375.

Implement or Machine, £1000 Prize for New, Proceedings in regard to, 405, 408, 410.

Implements Committee, Proceedings of, 392, 408.

Importation of Meat, &c. (Wrapping Materials), Order of 1932, Proceedings in regard to, 387.

Improvement of Live Stock (Licensing of Bulls) Act, 1931, Proceedings in regard to, 393.

Insect and other Animal Pests of 1932, by R. Stewart MacDougall, M.A., D.Sc., LL.D., 46.

Inverness Show, 1932: Report on, 249; Premiums awarded at, 281; Judges, 371; Attending Members, 372; Abstract of the Accounts, 380; Proceedings in regard to, 385, 390, 393, 394; Reports to General Meetings, 413, 420; Proceedings at General Meeting in Showyard, 414-418

James Archibald Prize, Proceedings in regard to, 393, 399, 406.
Judging, System of: Motion by Mr Robert Park submitted and approved, 398.

Live Stock (Licensing of Bulls) Act, 1931, Improvement of, Proceedings in regard to, 393.
Long Service Certificates and Medals, Regulations, Appendix, 87.
Lovat, Lord, K.T., K.C.M.G., Death of, 408.

Macaulay Institute for Soil Research: Application for Grant, 389.
MacDougall, Dr R. Stewart, M.A., D.Sc., LL.D., Insect and other Animal Pests of 1932, 46.
Macleod, J., B.Sc., Ph.D., Control of the Sheep Tick on Hill Pastures, 114.
Manure, Table showing the Value of Feeding-stuffs as, per ton, Appendix, 55.
Manures, Instructions for Valuing, Appendix, 53.
Maxwell, Major Wellwood, Death of, 406.
Medals, Ploughing, Regulations for, Appendix, 85.
Meetings, Proceedings at Board and General, 385-423.
Meetings, Regulations regarding, Appendix, 14.
Members, Analyses for, during 1932, by Dr J. F. Tocher, 181
Members, Privileges of, Appendix, 4.
Milk Records, by William Stevenson, B.Sc., N.D.A., N.D.D., 155.
Motor Vehicles (Construction and Use) Regulations, 1931, Letter regarding Threshing Engines, 400, 406, 407, 409.
Movable Stack Foundation, Proceedings in regard to, 389, 392.
Murdoch, Alexander, re-elected Chairman of Directors, 395.
Murray, John, Death of, 395.
Musk Rat or Musquash, Proceedings in regard to, 405.

National Diploma in Agriculture: Report on Examination, 413; Regulations and Syllabus, Appendix, 16; Successful Candidates in 1932, Appendix, 24.
National Diploma in Dairying: Report on Examinations, 422; Regulations and Syllabus, Appendix, 26; Successful Candidates in 1932, Appendix, 33.
New Implement or Machine, £1000 Prize for, Proceedings in regard to, 405, 408, 410.
New Members, 405, 420.

Oats, Price of, for 1932, 241.
Office-bearers, 1932-33, Election of, 411.
Ottawa Conference, Proceedings in regard to, 392.

Pasture Research, Some Practical Aspects of Recent, by Arthur Crichton, M.A., B.Sc., 103.
Pastures, Control of the Sheep Tick on Hill, by J. Macleod, B.Sc., Ph.D., 114.
Paterson, Principal W. G. R., B.Sc., N.D.A.(Hons.): Cattle Feeding; Relative Values of Swedes, Potatoes, Dried Sugar Beet Pulp and Silage in Beef Production, 23.
Pests, Insect and other Animal, of 1932, by Dr R. Stewart MacDougall, M.A., D.Sc., LL.D., 46.
Ploughing Competitions, Regulations for, Appendix, 85.
Poisonous Substances in Feeding-stuffs, Proceedings in regard to, 386.
Premiums awarded in 1932, 421; Offered in 1933, Appendix, 61.
Prices of Grain for 1932, 241.
Prices of Sheep, 242.
Prices of Wool, 246.
Privileges of Members, Appendix, 4.
Proceedings at Board Meetings, 385-410.
Proceedings at General Meetings, 411-423.

Rainfall Records for 1932, 226.
Records, Milk, by William Stevenson, B.Sc., N.D.A., N.D.D., 155.
Representatives appointed on other Bodies, Appendix, 13.
Research in Scotland, Agricultural, in 1932, 136.
Research, Some Practical Aspects of Recent Pasture, by Arthur Crichton, M.A., B.Sc., 103.
Revision of Bye-Laws, Proceedings in regard to, 387.
Roxburghe, The Duke of, K.T., Death of, 394.
Rural Child, The Education of the, by Professor E. Shearer, M.A., B.Sc., 81.

St Kilda Fund, Proceedings in regard to, 387.
Science Committee, Proceedings of, 386, 388, 401, 402.
Scotland, Agricultural Research in, in 1932, 136.
Scotland, Crops of, for 1932, 188.
Scottish Agricultural Organisation Society, Grant of £100 recommended, 403; Confirmed, 404; Approved, 420.
Scottish National Development Council, Proceedings in regard to, 392.
Scottish Traction Engine Owners' and Users' Association, Letter regarding Threshing Engines, 400, 406, 407, 409.

Shearer, Professor E., M.A., B.Sc., The Education of the Rural Child, 81.
Sheep, Prices of, 242.
Sheep Stocks, Valuation of, Proceedings in regard to, 399.
Sheep Tick on Hill Pastures, Control of the, by J. Macleod, B.Sc., Ph.D., 114.
Show, Date of Annual: Discussion at General Meeting in Inverness Showyard, 418.
Show of 1935: Not to be held in Border Division, 403; Notice of Motion to hold in Aberdeen Show Division, 403; Motion approved, 405, 421; Sites Committee, 408; Report to General Meeting, 421.
Some Field Experiments at Craibstone, by Professor James Hendrick, B.Sc., F.I.C., 1.
Some Practical Aspects of Recent Pasture Research, by Arthur Crichton, M.A., B.Sc., 103.
Stack Foundation, Movable, Proceedings in regard to, 389, 392.
State of the Funds, 376.
Statistics, Agricultural, 227.
Stevenson, William, B.Sc., N.D.A., N.D.D.: Milk Records, 155.
System of Judging, Motion by Mr Robert Park submitted and approved, 398.

Threshing Engines: Letter regarding application of Motor Vehicles (Construction and Use) Regulations, 1931, 400, 406, 407, 409.
Tocher, Dr J. F.: Analyses for Members during 1932, 181.
Trespass, Damage by, Proceedings in regard to, 396, 410.

Unit Values, Schedule of, Appendix, 52.
Use of Chlorates in Weed Control, The, by D. Clouston, M.A., B.Sc., and A. Hill, B.Sc., B.Sc.(Agric.), 128.

Vacancy on Board: Mr William Henderson nominated, 385; Elected, 411; Mr James Wyllie nominated, 400; Elected, 420.
Valuation of Sheep Stocks, Proceedings in regard to, 399.
Veterinary Department: Medals awarded in 1932, 373; Appendix, 46.
Veterinary Surgeon, Consulting: Motion by the Hon. T. G. P. Corbett submitted, 402; Not approved, 408.

Warble-fly Investigation: Proceedings in regard to, 389, 403.
Weather of Scotland in 1932, by J. Crichton, M.A., B.Sc., F.R.S.E., 214.
Weed Control, The Use of Chlorates in, by D. Clouston, M.A., B.Sc., and A. Hill, B.Sc., B.Sc.(Agric.), 128.
Wheat, Price of, for 1932, 241.
Will, George, Death of, 394.
Wool Breeding Council: Letter from Department of Agriculture, 395.
Wool, Discolouration of: Proceedings in regard to, 386, 388; Report on Conference with Sheep Breed Societies, 401; Report to General Meeting, 413.
Wool, Prices of, 246.
Wyllie, James, nominated as a Director, 400; Elected, 420.

York, T.R.H. The Duke and Duchess of, to visit Dundee Show, 409.
Young Farmers' Clubs by W. J. Grant, M.A., B.Sc., 88.

Printed in Great Britain by
WILLIAM BLACKWOOD & SONS LTD.

Keds?

They don't worry me now. I always use

BORDER DIP

(WATERPROOFING PASTE)

because it kills the eggs as well, and keeps the sheep clean till shearing.

Equally reliable—
COOPER'S WORM TABLETS MARKING FLUID
ARSENICOL (Foot-rot Cure) TEREBENE BALSAM

AGENTS EVERYWHERE

COOPER, McDOUGALL & ROBERTSON (Scotland) LTD.,
62, Robertson Street, GLASGOW, C.2.

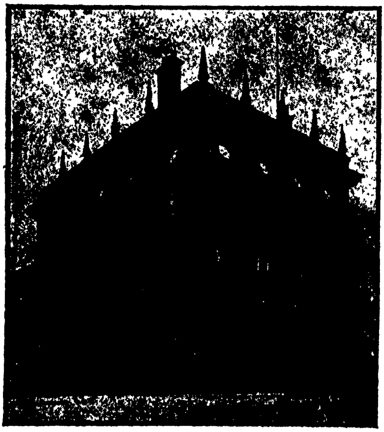
14925

ROYAL BANK OF SCOTLAND

Incorporated by Royal Charter 1727.

Capital (fully paid) - - - £3,780,192
Rest or Reserve Fund - - £3,780,926
Deposits - - - - - £55,898,683

AN INDEPENDENT SCOTTISH BANK
ESTABLISHED OVER 200 YEARS.



Dundee Office: HIGH STREET

Agent: QUINTIN B. GRANT.
With 9 District Branches.

With its extensive Branch system throughout Scotland, four Offices in London, and Correspondents in every Country in the World, the Bank is in close touch with industrial conditions and is in a position to handle every description of British, Colonial and Foreign banking business on very favourable terms.

CORRESPONDENCE INVITED

HEAD OFFICE - - EDINBURGH
General Manager: SIR ALEXANDER K. WRIGHT, K.B.E., D.L., LL.D.
Associated Bank: **WILLIAMS DEACON'S BANK, LTD.**
(Member of the London Bankers Clearing House.)

A Footwear Service For Particular People

EVEN in this age of mass production and cheapness there are thousands who appreciate a good quality article and who are prepared to pay a reasonable price for it.

ESPECIALLY does this apply to Footwear. Discriminating people judge their footwear expenditure not by the cost per pair, but by the cost per year. Good Shoes, such as Chalmers consistently offer, are made better, last longer, and keep their smart appearance to the end. Thus the cost of their Footwear wardrobe *per year* is often less than if cheaper Shoes has been bought.

IN addition to Footwear, there is always a comprehensive range of STOCKINGS and HANDBAGS at moderate prices.

CHALMERS

40 High Street, Dundee

Telephone 5386. *Established in the Reign of George IV.*

Graham

STEWART'S
HAIRDRESSING

Well Understood
and Practised
to
Perfection !

The Stewart craftsmen are highly trained—they have the latest equipment—and they work in the knowledge that the Stewart reputation must be maintained. Being Specialists they recognise that for every client there is a particular and individual treatment. In this attention to individual needs lies the artistry of Stewart hairdressing.

STEWART'S
(*J. STEWART, LIMITED*)

12 Reform St., Dundee

ALSO AT

78 Buchanan St. and 82 Union St., Glasgow, and 122 Princes St., Edinburgh

John Roger & Son

(John A. Roger)

Wholesale Game, Rabbit and Poultry Salesmen

ESTABLISHED 1883

28 Union Street - DUNDEE

Solicit enquiries regarding the disposal of surplus Game; special facilities for the disposal of large shoots.

Hampers supplied.

Bankers:
British Linen Bank, Nethergate,
Dundee.

Telephone
2205.

Telegrams:
"Grouse," Dundee.

EDINBURGH WOOL SALES.

RUSSELL & RAMSDEN,

WOOL BROKERS, EDINBURGH,

ESTABLISHED 1864,

HOLD Periodic Sales of all sorts of Home-Grown Wools. These Sales are held monthly in summer, and periodically during the remainder of the year. A large business is also done by private treaty.

RUSSELL & RAMSDEN confine themselves entirely to their business as Wool Brokers, and therefore devote undivided attention to the interests of their consigners.

When desired, cash advances are sent on receipt of consignments.

SCOTLAND'S BEST WOOLS AT LESSLIE'S

See the Display of ALL SCOTTISH WOOLS and Materials for Fashioning Garments of Quality. Also Art Silk and Pure Silk Hose in the Fashionable Shades at popular prices.

LARGE STOCK OF WOOLS FOR MAKING
PLUS-FOUR HOSE AND SPORTING GARMENTS.

A few CARDIGANS and SPENCER COATS at reasonable prices.

LESSLIE'S WOOL STORE

18 Castle Street, DUNDEE. **Established 1787**

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

FOUNDED 1784

Privileges of Members

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered, and Long Service Medals.*
3. *To report Ploughing Matches for Medals that may be Offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To reduced rates for exhibits in the Society's Shows.**
6. *To have Manures and Feeding Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To Attend and Vote at General Meetings of the Society.*
10. *To Vote for the Election of Directors, &c., &c.*

Analysis of Manures and Feeding Stuffs

This scale of fees applies only to Members whose subscriptions are not in arrears.

The Fees of the Society's Chemist for Analysis made for Members of the Society shall, until further notice, be as follows :—

The determination of *one* ingredient in a single sample of manure or of a feeding stuff, ...	5s.
The determination of *two or more* ingredients in a single sample of manure or of a feeding stuff, ...	10s.

These charges apply only to analyses made for agricultural purposes for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

If the sample represents a substance bought under a guarantee, and if it is found to be notably deficient, the Society will communicate with the vendor and endeavour to obtain compensation for the buyer.

The Society's Chemist also supplies valuations of manures, according to the Society's scale of units, in cases in which the cash price asked by the seller accompanies the sample.

Chemist.—Mr J. F. TOCHER, D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

Reports on the Animal Enemies of Crop Plants and Live Stock (Including Poultry)

The Consulting Entomologist is prepared to send a Report to any Member of the Society on damage or diseases of plants and animals due to animal agency (Insects, Mites, Worms, Snails, Slugs, Birds, and the Smaller Mammals). The charge for examination and report has been fixed at 1s., which should be paid at the time of application, and the carriage of all parcels must be prepaid.

Entomologist.—Mr R. STEWART MACDOUGALL, M.A., D.Sc., Ivy Lodge, Gullane.

Objects and Usefulness of the Society

The Society devotes the whole of its resources to promoting the interests of the Agriculture of Scotland and allied industries.

The scope of the Society's work, beyond its great Annual Show, is indicated so far in the foregoing brief statement of the privileges of Members. Much is done, however, in addition to all this.

The Society makes grants of money and medals to a large number of Local Farming, Horticultural, and other Societies for Live Stock, Cottages and Gardens, &c.

In conjunction with the Royal Agricultural Society of England, it holds annual examinations, and grants Diplomas and Certificates in Agriculture and Dairying. An Examination for Certificates in Forestry is also held annually.

The Society avoids questions of political controversy, but in other public matters of practical concern to Agriculture it seeks to guard and promote, by every means in its power, the welfare of all interested in the Agriculture of Scotland.

The influence and usefulness of the Society depend mainly upon its strength in membership. The Members, through the Directors whom they elect, have the

---

* Firms are not admitted as Members; but if one partner of a firm becomes a Member the firm is allowed to exhibit at Members' rates.

practical control of the affairs of the Society. The stronger the body of Members, the greater will be the usefulness of the Society. It will therefore be to both their own and the public advantage if all who are interested in Agriculture, and who are not already enrolled, should at once become Members of the Society.

Election of Members

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

Conditions of Membership

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land-Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, £5, 5s., and after twelve such payments, £3, 3s.* Subscriptions are payable on election, and afterwards annually in January. According to the Charter, a Member who has not objected to his election, on the same being intimated to him by the Secretary, **cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.**

* Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed on it.

Members are requested to fill in the names and addresses of Candidates they have to propose, stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list, and return this Schedule to the Secretary, Mr JOHN STIRTON, No. 8 Eglinton Crescent, Edinburgh.

NAMES AND ADDRESSES OF CANDIDATES.	State whether on £1, 3s. 6d. or 10s. list.
Name.. **Occupation*.. *Address*.. .... *County*..	
Name.. **Occupation*.. *Address*.. .... *County*..	

* To be filled in where Candidate claims to be eligible under the lower or 10s. rate of Subscription.

Proposed by ....

Address..

Date..............................1933.

Subscription should not be sent until notice of election is received.

Next election of Members will take place in January 1934.

Highland & Agricultural Society of Scotland

RATES OF CHARGES FOR ADVERTISEMENTS IN THE PUBLICATIONS OF THE SOCIETY

PREMIUM LIST—ANNUAL NATIONAL SHOW.

Issued early each year to Proprietors, Farmers, and other Owners of Horses, Cattle, Sheep, Goats, Pigs, Poultry, &c., Implement Makers, Engineers, and all likely Exhibitors throughout the United Kingdom.

Page, 7" × 4" (ordinary position),	£6	0	0
Half page,	3	10	0
Quarter page,	2	0	0

CATALOGUE OF STOCK—ANNUAL NATIONAL SHOW.

(Issue—from 10,000 to 12,000 Copies.)

Sold at 1s. 6d. and 1s. to visitors to the Show, which is held in rotation in the leading centres in Scotland, and extends over four days in June.

Page, 7" × 4" (ordinary position),	£5	0	0
Half page,	3	0	0
Quarter page,	2	0	0

THE TRANSACTIONS.

Issued annually in May in a handsomely bound volume, each Member of the Society—over 10,000 in number—receiving a copy.

Page, 7" × 4" (ordinary position),	£6	0	0
Half page,	3	10	0
Quarter page,	2	0	0

RATES.—In one Publication, *strictly net;* in two Publications, 5 *per cent reduction;* and in three Publications—if ordered at same time—10 *per cent reduction.*

Only a very limited number of Advertisements can be accepted for the PREMIUM LIST and the TRANSACTIONS.

Quotations for Special Positions on application.

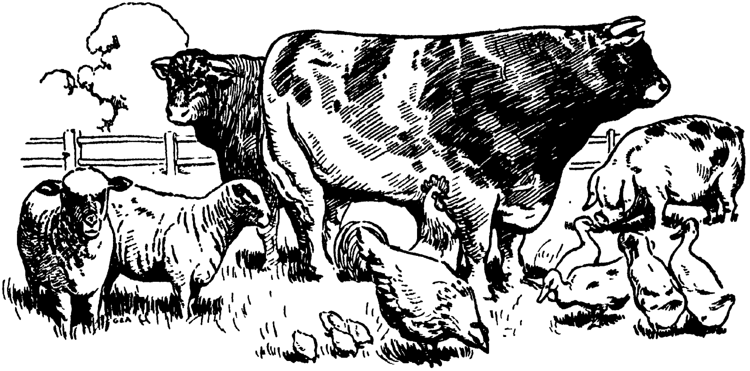
All Communications regarding ADVERTISEMENTS to be addressed to the Society's Advertising Agents—

ATLAS PRESS Ltd., 39 Albert Square, DUNDEE.

All Orders for Advertisements in the Publications of the Highland and Agricultural Society are accepted subject to the approval of the Secretary of the Society.

JOHN STIRTON, *Secretary.*

OFFICES OF THE SOCIETY,
8 EGLINTON CRESCENT, EDINBURGH.



ENSURE RAPID HEALTHY GAIN IN WEIGHT—

MORE AND BETTER DAIRY PRODUCE—

by feeding all your live-stock with BICOL VETERINARY COD LIVER OIL.

BICOL is rich in the two elements which build stamina and cure rickets, colds and coughs—Vitamins A and D. A small dose daily ensures more eggs from your poultry, and more milk from your cows—and continual good health for all your young and full-grown stock.

GIVE——

Bicol Veterinary Cod Liver Oil

a trial—you'll soon notice the difference it makes. Very economical to use. Trial gallon 6/3, carr. paid, and in free container.

2 gallons . .	10/6	10 gallons . .	45/-
5 gallons . .	25/-	40 gallons . .	170/-

Carriage Paid nearest Station.

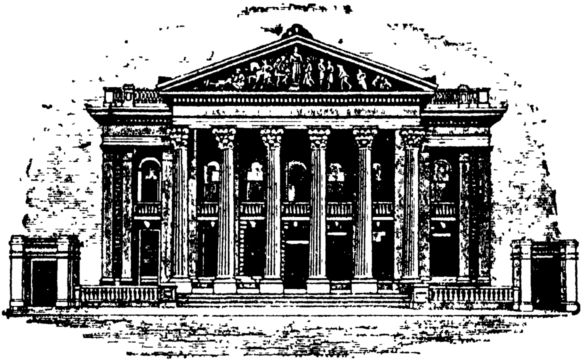
Product of BICOL LTD., GRIMSBY

From Merchants everywhere, or

JAS. BLAIN & COY., LIMITED

28 YORK STREET, GLASGOW, C2

THE
COMMERCIAL BANK
OF SCOTLAND LIMITED.
Established 1810.



Head Office: 14 George Street, Edinburgh.

General Manager . . JOHN M. ERSKINE.
Secretary . . . . GEORGE HAY.

London (City) Office: - - 62 Lombard Street, E.C.3.
Kingsway Branch: - Imperial House, Kingsway, W.C.2.

354 Branches & Sub-Offices in Scotland

ALL CLASSES OF
BANKING BUSINESS
TRANSACTED.

Trustee & Executry Business Undertaken.

I. A. R. I. 75.

IMPERIAL AGRICULTURAL RESEARCH
INSTITUTE LIBRARY
NEW DELHI.

Date of issue.	Date of issue.	Date of issue.
2. 2. 37		